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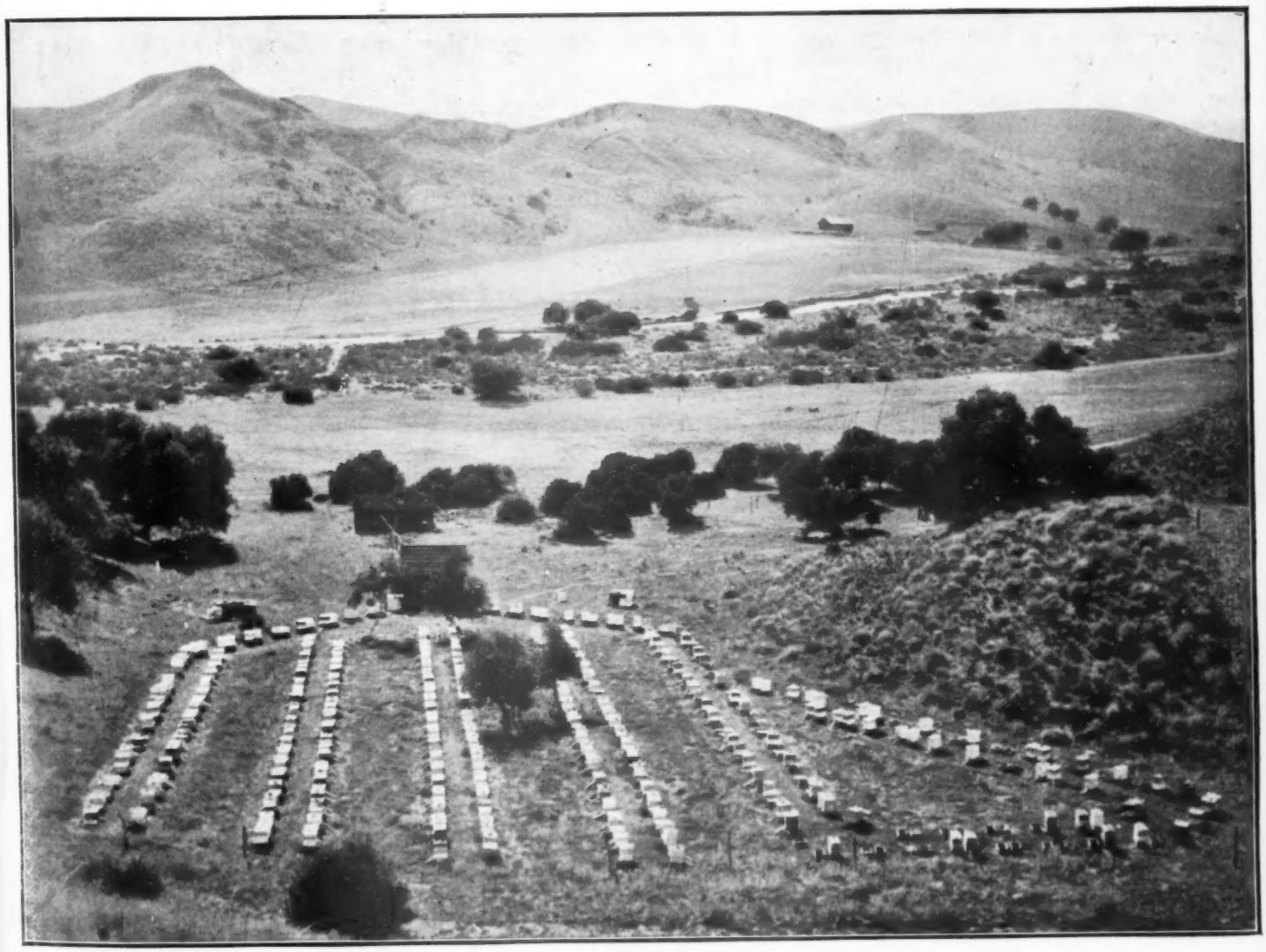

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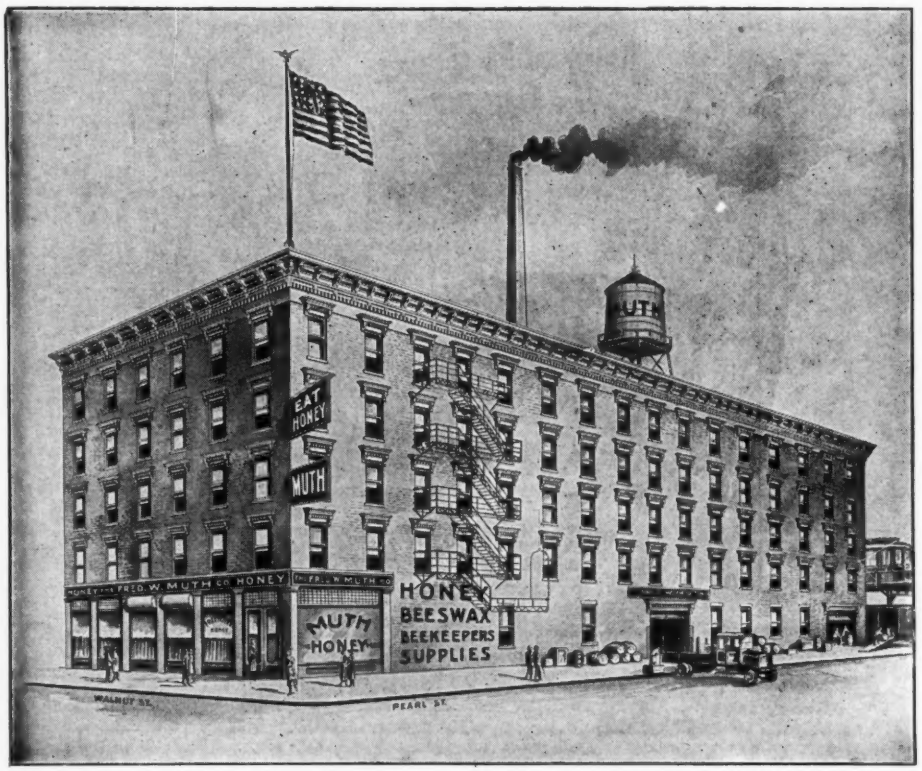

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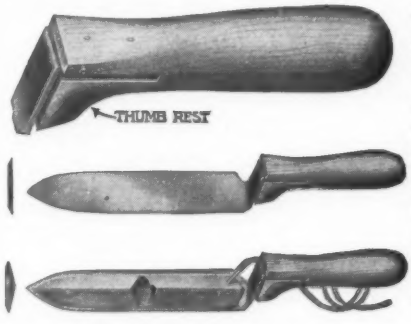

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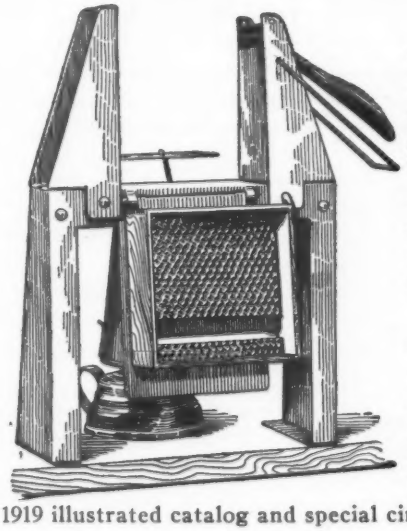

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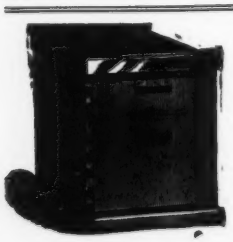

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AMERICAN BEE JOURNAL

VOL. LIX—NO. 8 HAMILTON, ILL., AUGUST, 1919 MONTHLY, $1.00 A YEAR

WHOLESALE QUEEN-REARING

Methods of a California Queen Breeder Who Rears Thousands of Queens for the Trade---By Frank C. Pellett

THERE is no branch of beekeeping that requires the exercise of so much skill on the part of the operator as queen-rearing. When conducted on the large scale which is necessary to make it commercially profitable as a specialty, the problems are multiplied. To rear a few queens during the honeyflow, when everything is favorable, is a simple matter, but to continue a uniform production, week after week during the entire season, is a different thing.

Under natural conditions, queen-cells are only built in preparation for swarming or to supersede a failing queen. Swarming cells are to be expected only when nectar is coming freely from the fields. The queen breeder must imitate natural conditions as far as it is possible to do so, in order to induce the bees to continue cell-building. The queen-breeder who has a location where a light flow of nectar continues for a long period of time is fortunate. Lacking the natural flow, the usual method is to resort to artificial stimulation by feeding a small quantity of thin syrup, daily, to cell-starting and cell-building colonies.

Migratory Queen-Rearing

We hear much of migratory beekeeping and it is in California that migratory beekeeping assumes such proportions that it is the common practice of big producers. It has remained for a California queen breeder to adapt the practice to his own specialty, and migratory queen rearing may, in time, become popular.

J. E. Wing, of San Jose, is one of the most extensive queen breeders on the Pacific Coast, and probably the first to adopt migratory practice to the queen business. With a sudden termination of the flow at the home yard, he has found it possible to move his outfit a distance of 75 miles, to a point where a honeyflow was in progress, and continue operations without interruption. On one occasion, when the outfit was moved as shown in the photograph, a batch of 109 new cells had been given to the cell builders the day previous, yet 105 were nicely finished, in spite of the 75-mile journey.

M. G. Ward is the queen breeder who has direct charge of the operations, under Mr. Wing's direction, and Bevan Hugh, of British Columbia, is an assistant. The photograph shows Mr. and Mrs. Wing, Wing junior with Mr. Ward and Mr. Hugh.

At the close of the season, last year. Mr. Ward was turning out 1,800 queens per month, with 800 baby nuclei, mating better than an average of two queens each month from each nucleus. Since no queens are sent out till they begin to lay, there is not much time for replenishing bees, in these small mating boxes, from the new queens. This is provided for by means of a reserve supply of colonies in hives, with 17 baby frames. Combs containing bees, brood or honey are drawn from the reserve hives, as needed, and given to the nuclei.

One of the worst objections to the baby nuclei, for mating purposes, is the difficulty of maintaining them. During the honeyflow they do very nicely, providing the queens are per-

Mr. J. E. Wing and family in center, Bevan Hugh at right, M. G. Ward at left

mitted to continue laying long enough to keep up the stock of bees, yet are removed before the small hive becomes overcrowded. The Wing system, whereby the honey-flow is continued by moving to another point when necessary and supplying necessary bees or stores from other colonies, overcomes most of the objections to the small mating box.

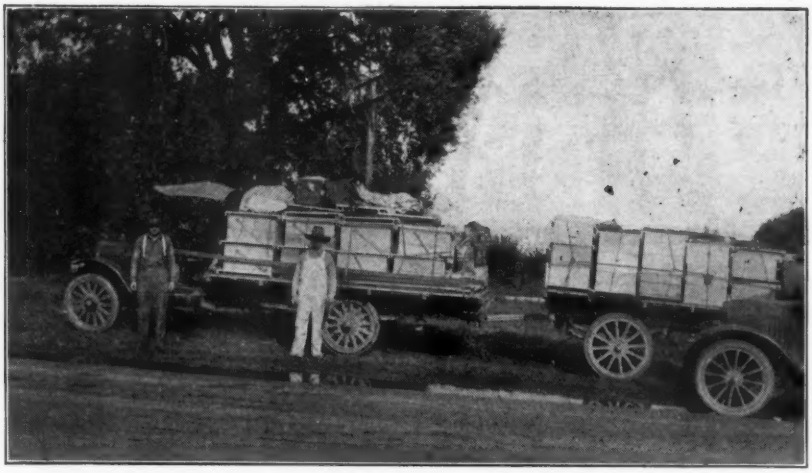
San Jose is situated in the fruit district, where prunes are an important crop. Almonds, filaree and mustard bloom in February, thus starting the season early. Cherries, peaches, pears and apples, together with other fruits, guarantee nectar continuously until late in April. It is not regarded as a good locality for surplus honey, but a light flow, just sufficient for stimulation, is better for the queen breeder than a heavy flow.

In summer there is alfalfa, sweet clover, teasel, horehound and many other minor sources to keep the bees busy. As already mentioned, in order to prolong the season the bees are moved to the river bottom, for honeydew from willows, for late summer and fall. In California there is always something yielding sufficient nectar to keep the bees breeding, from February till October, if one goes far enough. If a breeder can prolong his season one or two months by making a move of 75 miles, he can afford to incur considerable expense to do so. Especially is this true of a concern which can turn out 1,800 queens in a month, as Ward did last fall.

The great difficulty with queen-rearing in the Northern States is the short season. In California, the breeders begin stocking nuclei in March and are running at full capacity by May, at which time northern breeders are just getting started. In the Wing location they count on a season of six to seven months, with five months to full capacity.

The Argentine Ant Pest

The Wing yards are located in a region infested with the Argentine ants. In the December, 1918, issue of this journal is an extended description of the habits of this pest. So far, it has not become established to a serious extent except in a few localities in Alabama, Louisiana and California. It is so destructive to bees that the hives must be placed on stands beyond the reach of the insects. As will be seen by the illustration, Wing suspends his hive-stands from supports by means of wires. The wires are covered with crude oil, which must be renewed frequently. Under favorable conditions, it is not necessary to renew the oil oftener than once in two weeks, but in case of dust storms, more frequent oiling is necessary. If grass or weeds are permitted to grow where they touch the stands, the ants will soon find the way up and will attack the bees.



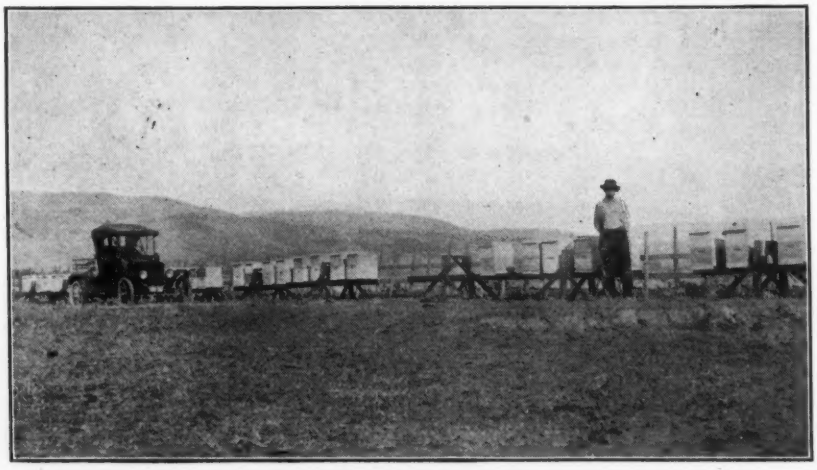
Wing's queen-rearing outfit on the move

As to actual apiary practice, Mr. Ward, who has charge of the queen breeding in the Wing yards, does not depart very much from the usual methods. He dips his own cells, preferring them to those to be bought from supply firms. If there is time he gives each batch of cells to the bees a few hours before grafting, but in transferring the larvæ he uses no royal jelly. The fact that he is able to turn out 1,800 queens in a month's time indicates that he is able to get a large proportion of cells accepted. However, in order to get cells accepted without jelly, all conditions must be very favorable, and the colony in ideal condition. All cells are started with queenless bees and the following day are removed to be finished above a queenright colony. On the 10th day after grafting, all cells are caged or given to nuclei. To stock the nuclei in spring, a swarm box is used with two frames of brood. Bees are removed to another yard to prevent return to original location.

Future of Queen Business

Never in the history of the beekeeping industry has the future prospect been as bright as at present. The abnormal conditions caused by the world war have introduced the use of honey into thousands of homes where it had not been used previously, and hundreds of new markets have been opened for the beekeepers' product. If the beemen are active in organization and advertising, a good market at remunerative prices will be permanent. The expansion of commercial honey production makes such a demand for queens as never has been known before. Although every queen breeder in the land has increased his output and numerous new recruits have engaged in the business, still the demand for good queens has exceeded the supply. There is every indication that the queen breeder who sends out only good stock and gives his customers prompt service, will never lack for a market for his output.

So keen is the demand for queens that large producers can only be sure of getting a sufficient supply by rearing them in their own yards.



One of the Wing apiaries on platforms supported by wires coated with oil, to avoid ants

Some Observations on Nosema-Disease

By G. F. White, Bureau of Entomology, Washington, D. C.

(Continued from July)

Symptoms of Nosema-disease

From what has already been said it is seen that weakness is one of the colony symptoms of Nosema-disease. When a sufficiently large number of the bees of the colony are infected and the infection persists for a sufficiently long period, weakness will inevitably result and become apparent. On the other hand, when only a small number of bees are infected, or

the infection persists for a short period only, the weakness resulting passes unobserved. The loss in strength is more often gradual, but may be quite sudden.

The diseased bee, as to its outward appearance and general behavior, is not particularly unlike the healthy one. The infected workers carry pollen, honey and water, and at the entrance of the hive cannot be distinguished from healthy ones. It was found, from experiments carried on during the fall and early winter, that the cluster of heavily-infected colonies was easily disturbed, and when disturbed, the bees ran badly.

As a rule, the stores in a Nosema-diseased colony are sufficient. The queen does her work well, and when the colony dwindles and dies out she is usually to be found among the last handful of bees. The brood is normal in appearance, but is frequently in excess of the amount that can be comfortably cared for.

Sooner or later the stomach of the diseased bee invariably furnishes positive evidence of the presence of the disease. Usually by the end of the second week, following the infection, the organ becomes lighter in color. It is also somewhat larger, softer and more easily torn. Late in the disease its size is about that of the healthy stomach and it is almost white. This colony symptom is the most valuable of all and furnishes positive evidence of the presence of Nosema-disease.

The spotting which characterizes dysentery is absent, and the trembling that is frequently described for one, or possibly more, abnormal conditions of bees, is not a noticeable symptom of the disease. While not infrequently there are more dead bees on the ground in front of a hive housing a Nosema-diseased colony than a healthy one, a heap of bees, such as is so often found in front of hives where paralysis is present, seldom, if ever, occurs in Nosema-disease. In experiments conducted in the fall and early winter, more dead bees were found on the bottom-board, in case of inoculated colonies than uninoculated ones. The crawling and climbing tendency of bees, described as symptoms in some bee troubles, does not characterize Nosema-disease.

Adult Workers, Drones and Queens Susceptible to Nosema Infection

After a colony, free from the disease, has been fed syrup to which the parasite (**Nosema apis**) has been added all, or practically all, of the workers of the colony become infected. When there are drones, in the colony, they also become infected in a somewhat similar proportion. When queens from such colonies are examined they, too, are sometimes found to be infected, but frequently they are not. From observations thus far made, infected queens are less likely to be encountered during the active brood-rearing season than at other times of the year. In the experience of the writer, no Nosema-infected drones were found except in colonies in which the disease was produced by artificial inoculation. It is interesting, also that the old, shiny bees in nature were not found infected. That they are susceptible, however, to infection, was demonstrated, as was done in the case of drones, by experimental inoculation.

Brood Not Susceptible to Nosema-Infection

Studies were made of the brood in experimentally infected colonies, and in no instance were infected larvæ found, either worker, drone or queen. The pupæ, likewise, upon examination, were always found to be healthy. Young bees emerging from the brood-comb were invariably free from infection.

Length of Time an Infected Bee Lives

It is not known positively whether a Nosema-diseased bee ever recovers from the disease. Some of the observations suggest that now and then a worker recovers from the infection. If this ever occurs, it is decidedly the exception, for they usually die. It should be emphasized here, that a bee does not die of the disease soon after becoming infected, but lives for a relatively long period. As the length of life of healthy queens, workers and drones, respectively, is different, so it is to be expected that the period of life of infected ones will also be different. Infected queens will probably live longer than infected workers and infected workers will live longer than infected drones. That the age of the bee at the time of infection will determine to a certain extent the period it will live, is evident from the nature of the disease. That the season at which infection takes place has much to do with the period a worker infected with **Nosema apis** will live is also evident from the nature of the disorder. Infected during the more active bee season, a worker will live longer, other things being equal, than if infected during some less active season. During the winter season, at least, the strength of the colony to which an infected worker belongs, and the percentage of diseased bees present, probably have something to do with the period the worker will live. Observation made on medium-sized colonies, inoculated late in the fall, showed that most of the workers live more than 2 months, but less than 3. During the summer most of the infected ones die in less than one month.

There is considerable evidence to indicate that queens are not as readily infected as are the workers. This seems to be true especially during the more active season. Among the queens taken during the active season, from experimental colonies in which a heavy infection among the workers had been produced, as the result of inoculation, rarely have infected ones been found. There is some evidence, also, that queens, under favorable circumstances, may recover from Nosema-infection. A careful microscopic study of queens from infected colonies, made during the less active season, showed some free from infection, others heavily infected, and still others with only a slight amount of infection.

It will be seen that the question, relative to the period an infected bee lives, is dependent upon many factors and that considerable data must yet be obtained before statements of a more definite character can be made.

Length of Time the Germ Lives

After the germ of Nosema-disease is voided from the alimentary tract it invariably dies unless it is taken up by some other bee. The same is true of the germs in the body of bees that die of the disease. They do not die immediately, however, but live a variable length of time, depending upon the environmental condition. The question relative to the period the parasite will live when subjected to heat, drying, sunlight, fermentation, putrefaction and freezing, respec-

M. G. Ward grafting cells

tively, was the subject of a considerable number of experiments. The periods it will live in honey, in pollen, and when in the body of dead bees, were also subjects of study.

The approximate period the germ (**Nosema apis**) remains alive, in each of the various environments, respectively, is as follows:

Suspended in water, the germ was killed at a temperature of about 136 degrees F., in 10 minutes.

Allowed to dry outdoors, in an empty hive- body, it was dead in about 2 months. Drying at room temperature, it lived about the same length of time.

When dry and exposed to the direct rays of the sun, it was destroyed in from 15 to 32 hours.

In honey, and exposed to the direct rays of the sun, it was usually destroyed by the heat acquired by the honey during the exposure.

In a 20 per cent honey solution, fermenting at outdoor temperature, it was destroyed in about 9 days.

In a putrefying suspension, at outdoor temperature, it lived more than 3 weeks.

The germ withstood more than one freezing in water. How often it will withstand freezing and thawing has not been determined, and likewise the length of time it will live frozen in ice is not known at the present time.

In honey, at room temperature, the parasite lived from 2 to 4 months.

Mixed with pollen, it dies, but lives somewhat longer than when allowed to dry in an exposed environment.

The germ lived in the body of the dead bees, at room temperature, about 4 weeks, at outdoor temperature about 6 weeks, and at icebox temperature about 4 months.

In the body of dead bees lying on the soil, in the open, but somewhat protected, it lived from 6 to 10 weeks.

The temperature is a factor in the environment which has much to do with the period **Nosema apis** will live.

Spread of Nosema-disease

Naturally the problem of the spread of Nosema-disease could be completely solved if it were possible to follow the germ (**Nosema apis**) in nature, during the period it remains alive and outside the living bee. Unfortunately this is well-nigh impossible. Much can be done, however, and already some important determinations have been made. From the studies made, it has been possible to separate the modes of transmission which are most likely from those which are not so likely.

By feeding colonies syrup, to which the germ was added, it has been shown that Nosema-disease is produced. The same is true also if water, to which the parasites are added, is given to bees. Nosema infection of bees takes place, therefore, by way of the alimentary tract. This fact is especially important in estimating the probable source of infection, in Nosema-disease.

For purposes of discussion, the problem of the spread of the disease may be classed into 3 subdivisions—the transmission (1) from the diseased apiary to the healthy one, (2) from the diseased colony to the healthy one in the same apiary, and (3) from the diseased bee to the healthy one in the same colony.

The question of the spread of Nosema-disease from apiary to apiary, and from one section of the country to another, cannot have the same interest to American beekeepers as does the question of the spread of the foulbroods. This is true because Nosema-disease exists already, it may be said in a general way, in all sections of the United States, and furthermore, it probably has had this wide distribution for centuries. From the facts which have been established regarding the period the germ lives in the different environments in which it is likely to be present, the beekeeper is enabled to estimate, with some degree of satisfaction, the likelihood of the germ being transmitted from one apiary to another and producing disease.

That infection, from one colony to another, occurs is certain, but the exact means by which it takes place is not entirely known. In the experimental apiary the diseased colonies had free access to the flowers of the fields, as did also the healthy ones. In none of the many experiments that were made, from 1912 to 1916, inclusive, did Nosema-disease appear in the uninoculated colonies during the active bee season. If it were at all likely that Nosema-disease is transmitted by flowers, to an appreciable extent, there would have been a different observation to report in this connection.

Experiments were made, in which brood-frames from Nosema-diseased colonies were inserted, during the active bee season, into healthy ones, after they had remained out of the hive for a variable length of time. Others were inserted immediately after they were taken from the hive housing a diseased colony. In no instance did Nosema-disease appear to any appreciable extent.

(To be continued)

Dr. G. F. White, an eminent bacteriologist and the author of several Bulletins of the Bureau of Entomology, was the first bacteriologist to describe the two kinds of foulbrood, bacillus larvæ and bacillus pluton. His descriptions of the bacilli of foulbrood are accepted in both hemispheres as correct

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THE EDITOR'S VIEWPOINT

Preparation for Winter

Hardly seems appropriate to urge now the preparation of colonies for winter. But good, vigorous queens soon will mean a strong lot of bees to start in the winter.

If there is a honey dearth and bees run short it may be necessary to feed to keep up breeding or even the best queen will fail to fill the hive with plenty of bees for winter.

Remember that the three requisites for successful wintering are plenty of good stores, a large force of young bees, and sufficient protection. We can give the last one of these later on, but the first two must be in preparation before fall comes.

Now is the Time to Requeen

It is always time to requeen if queens are available, and if your colonies are deteriorating on account of lack of new stock.

But in the spring, when conditions would be most favorable for observing the colonies and finding the worthless or poor queens, it is not always possible to get the queens from the breeders in the South, and the danger of loss in the mails is greater.

For these reasons probably a large proportion of beekeepers requeen in the summer. It is best, of course, if possible, to keep close tab on your colonies as to honey-gathering qualities, disease-resistance, gentleness, etc., and then breed from your best stock by one of the best methods.

But many otherwise good beekeepers keep no accurate tab on individual colonies, and many more do not care to enter upon queen-raising. These may profitably requeen by buying their stock.

How old should a queen be before she ought to be replaced? Usually not over two years old. Most large beekeepers agree that a queen after she has passed her second season of prolific laying is apt to decline, and either the next fall or spring become worthless. Nor can she be judged by the work she is doing now, what she will do in three weeks from now, or two months.

We would advise, therefore, general requeening every two years unless it is desired to keep the best stock for experiment or for breeding purposes, and this is especially true for the beekeeper who does not keep accurate records.

Queen Breeders Catching Up

After one of the wettest springs, a condition which is not conducive to best results in getting out capacity orders on time, the queen breeders are at last catching up on orders.

Many reliable breeders have had to disappoint customers simply because they took orders up to their capacity and found themselves at the last moment unable to fill such in time on account of the weather.

Watch for Moths in Extracting Combs

The careful beekeeper will not let the moths infest brood-combs on which the bees have died during the winter. He will either place these in the care of a strong colony, make divides into them, or thoroughly fumigate to kill the moths.

He is apt, however, to rely on the cold winter having destroyed all moth in his extracting house and consider his supers immune. Usually they are. But we must be prepared for the unusual.

Our suggestion is that such combs as are not used on the hives before midsummer, owing to shortage of crop, be gone over every two weeks to make sure moths have not made their appearance.

"An ounce of prevention is worth a pound of cure." A little disulphide of carbon on a rag on the top of each tier, carefully covered, is sufficient.

An Anzac in Hamilton

A bright young Australian, John H. Rosser, from near Brisbane, passed through Hamilton recently on a visit. He is 26 years old, served in a regiment of Australians at Le Cateau, and came to America on his way home. He is an active beekeeper, has been a subscriber of the American Bee Journal for 10 years and concluded to make a tour of the world while away from his native country. He reached Europe through Egypt, the Mediterranean and Italy; then, after the armistice, went to England. There he embarked for the United States. In New York he bought a motor cycle and started westward, visiting beekeepers on the way. He left us June 21 for Des Moines. From there he went to Denver, thence to San Francisco, where he expects to sail on August 12 for his home country, after visiting Hawaii. He will reach home just in time for their spring work, which begins in September. That month is to them the same as March is to us, with the only difference that they live in a warm country with but light frosts in the coldest July weather. Being at the antipodes, they have winter while we have summer.

Honey Prices

I really believe honey prices for the coming winter are worthy of an editorial.

Our untiring friend, Dr. Bonney, who still seems to have the eagerness of the cowboy that he used to be, writes us, enclosing printed quotations of the Montgomery-Ward Co., at Chicago. These quotations offer honey in 60-pound cans at $16.25 and in gallon cans at $3.70. They also offer maple sugar at 42 cents the single pound. Here is the doctor's letter:

My Dear Mr. Dadant:

I attach clippings from a catalog "of July-August" just at hand from Montgomery, Ward & Co, **and the customer pays the tariff.** I am now inclined to start prices at 25c a pound locally, and 30c by parcel post. That would mean $3.60 the gallon, cheaper by 10c than the mail order house list, but really less by nearly 3c a pound, with the postage paid.

Might I suggest that you touch on this editorially, using the slip about

maple sugar at 40c a pound to fortify an argument for good prices of honey?

White clover flow short. Too much rain, and the clover is not, even now, when the weather is dry, yielding as it should. There will be, I think, a short crop in Iowa.

Truly,
A. F. BONNEY.

The doctor appears to use sound reasoning. Let us not undersell each other. Everything is high, whether in the line of food or in the other lines—clothing, building material, etc.

Some of our friends accuse the "profiteers" of causing the high prices. We believe that the cheapness of money is at the bottom of it. Is the farmer a profiteer because hogs are 20 cents per pound, cattle 16 cents and corn $1.80? Everything is on the same scale. Labor has advanced and is not likely to go back to the old schedules for a long time, if ever. The only man who loses on these advances is the one who has a specified income based upon money at interest. That item has not yet raised, neither is it likely to raise. So there is no reason why the honey producer should not get at least twice as much for his honey as he used to get.

Dr. Arthur H. McCray

Dr. Arthur H. McCray, whose death was mentioned in the July number, was one of the scientists who helped diagnose bee diseases. In our account of the work undertaken at Washington, by the Bureau of Entomology of the U. S. Department of Agriculture, we gave, in February, 1916, a description of the work of Dr. McCray, as bacteriologist in the examination of samples of diseased brood received from beekeepers in all parts of the country.

This, however, is not the only work due to this eminent worker, on subjects that interest beekeepers. Dr. McCray, in connection with Dr. G. F. White, wrote Bulletin No. 671 of the Bureau of Entomology on "The Diagnosis of Bee Diseases by Laboratory Methods."

More recently Dr. McCray had been State Bacteriologist of Montana, and while thus engaged carried on investigations on Rocky Mountain spotted fever. He contracted this disease during his studies and it was the cause of his death. He was therefore a "martyr to the cause of science," and we should regret his death the more on that account. True courage is not only in fighting an enemy face to face. Many a scientist has lost his life in seeking to remove disease or prevent its spread.

The Evening Star, of Washington, D. C., had this to say about Dr. McCray's death:

"Dr. McCray, who was conducting experiments to isolate the germ of spotted fever, became infected while dissecting the carcass of a guinea pig, developed the disease, and after a prolonged fight for life, succumbed. High tribute to the memory of the physician was paid by Governor

The late Dr. A. H. McCray

Stewart and state officials, among them the state doctors with whom Dr. McCray had worked.

"Dr. McCray was born at Reynoldsville, Ohio, 38 years ago, and was married in Washington in 1915, to Adele Wilson, superintendent of the nurses' school at George Washington University in that year. He served as a lieutenant in the Medical Reserve Corps during the war."

Queen Breeders Versus Queen Buyers

No season yet, to our knowledge, has caused so much dissatisfaction between queen breeders and purchasers of bees, as the one just ending. We bred queens for sale ourselves, years ago, but soon decided that the breeding and selling of queens was injurious to a man's peace of mind. So all the queens that we have handled in the past 30 years have been produced by others. We are therefore well situated to give a curtain lecture to both buyers and sellers.

Queen breeding is very much like the raising of cabbages or melons; that is to say, we have to depend a great deal upon the season, the moisture, the sunshine, the absence of parasites, etc. We might promise melons for a certain date and find ourselves unable to supply them, even after great exertions.

The queen breeder has many obstacles to surmount. He is not always able to sell his entire output, and it is unusual for him to secure orders early in the season, for as large a number as he can fill. We therefore do not hold it much of a sin if he accepted more orders this year than he was sure of being able to fill. On the other hand, he should consider the customer's money as not earned, and therefore not his own, until he has filled the order sent to him. He must put himself in the customer's place and decide that the only way to retain his credit and do the fair thing is to refund the amount of the order, whenever it is demanded if unable to fill a promise.

The customer, on the other hand, must recognize the fact that queens are not kept in a bushel box, ready to be sent on 5 minutes' notice. If he has sent his order early, with the conditions and date of delivery well stipulated and agreed upon, he has a right to expect the goods or the money back, even though it may be a hardship on the breeder. But how many customers send money for a queen, to be delivered **by return mail?** Of course the man who pays his money and to whom the offer has been made to fill an order by return mail has a right to expect it. But in many cases beekeepers do not even enquire whether the breeder is ready to fill an order. They send the money, and their ire is aroused if the queen does not promptly arrive. Some even make the mistake of removing and killing the queen which they wish to replace, on the day upon which they send their order. And let us state here that this is the very poorest way to succeed in queen introduction, even if the queen should come without any postal delays

One more word. When queens are lost in transit, it is usually the shipper's loss. The consignee has therefore bad grace in being angry at the loss which he often charges to the shipper's ignorance, when it may be due only to circumstances beyond his reach. Shortage of weight of bees by the pound is often due to wear and fatigue in transit, and a nice lot of bees at the start may look very poor on delivery.

The American Bee Journal will not knowingly accept advertising of unreliable breeders, but it hopes that the customers will entertain charity for the unsuccessful efforts of hard-working queen breeders, when the season is against them.

AUSTRALIA, THE BEEKEEPER'S PARADISE

By Tarlton Rayment, Author of "Money in Bees," Etc.

(Copyright by the author)

West Australia

The great commonwealth of Australia has often been described as a land of "magnificent distances." So it is; it is so far removed from the home land of most of its original settlers that it is "down under" or, to use another term, it is the antipodes, and far too vast to attempt anything descriptive in less than six chapters. "Why six?" Well, there must be a limit somewhere, and since the largest star on our national flag has six points—one for each State—we have decided to give a point likewise to each of them. To avoid all interstate j alousies we propose to deal with them in geographical order, and should we degenerate into the vernacular, as most "Aussies" are prone to do, the appropriateness of the designation will be our chief excuse.

What a scintillating cluster is the Southern Cross. West Australia, South Australia, Victoria, New South Wales, Queensland, and, we almost forgot the "Apple Garden"—Tasmania. Unlike the Poet who went from east to west, we go the reverse, west to east. So here goes "The West."

It's a very wonderful country, immense, rich, pleasant, healthy, new. Its chief features are coastal forests of mighty Eucalyptus trees that rival the giants of America. The other great division comprises the gold country, yes, it has miles and miles and yet more miles of open plain country, baked under an ardent sun. Now don't jump to conclusions, the plains may prove a veritable flower garden. "Good for bees?" No one has tried it, but a kinsman who has traveled the interior tells me that he rode for days, and long days, too, through apparently unending beds of red "everlastings," then just as suddenly the color of the flowers appeared to change, and mile succeeded mile of white "everlastings," then yellow, and so on, until the whole affected one like the changing tints of some kaleidoscope. But my kinsman was after the gold that men dig for in the bowels of the earth, so the glory of the golden flowers did not receive its due. And there's not much water there, though "The West" possesses one of the most remarkable pipe lines in the world, for it is by pipe that water is conveyed to one of the great inland mining towns. It's "some" tube.

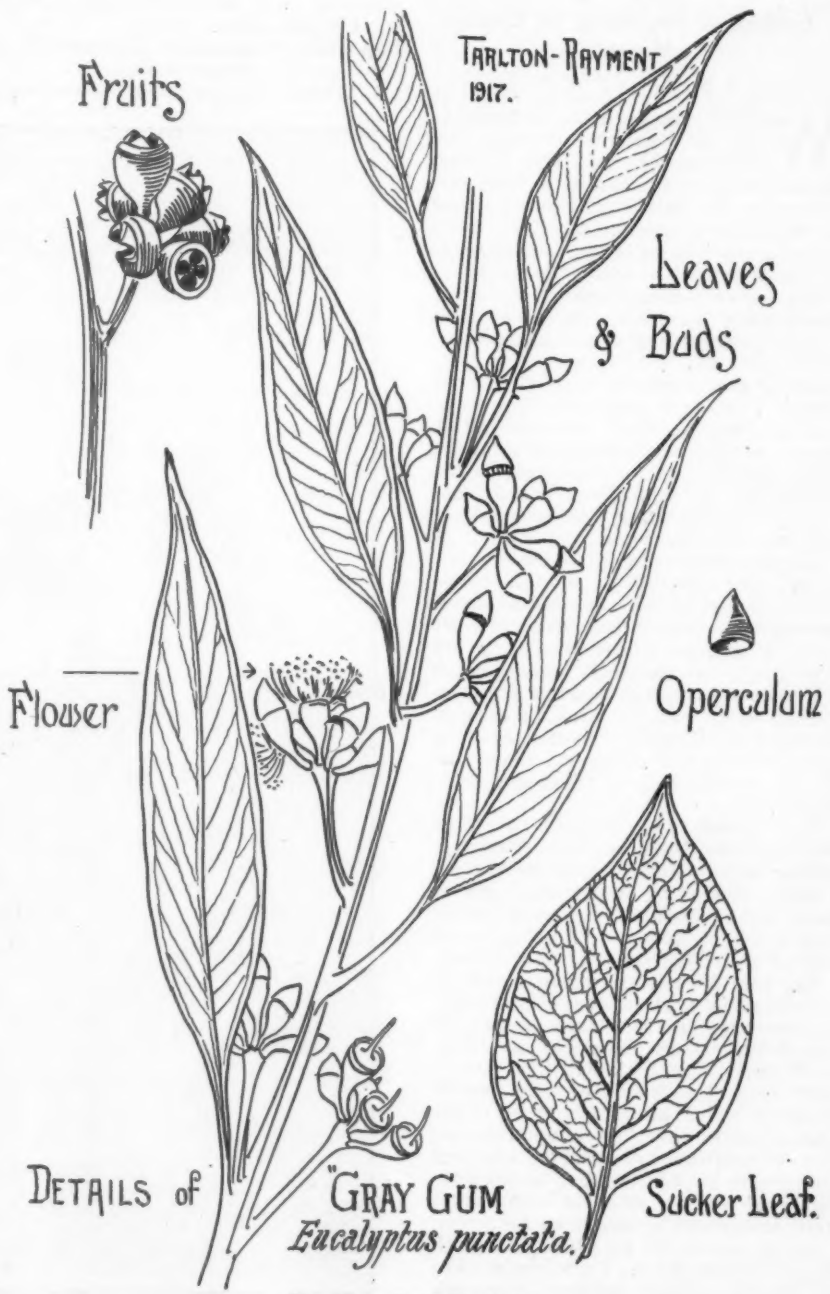
But we've strayed too far, or perhaps not far enough, for away to the northwest of the State are great cattle runs, and since the conditions are somewhat similar to those of the "Never Never," as the northern portion of South Australia is often called, we will deal more fully with the flora under the heading of that State. On the coast that borders the Indian ocean, pearl fishers pursue their enthralling quest to the accompaniment of sudden squalls that toss the tiny craft clear of high water mark or else, as the Germans say, "spurlos versunken," sunk without a trace.

Wist a moment. We have our magic pen.

First, a subtil fragrance steals through the forest air. It is delicate, yet insistent. "Chop—Chop—Chop—Chop, the rhythm of the axemen's blows provide the music of the bush. The sharpened steel rings as it cleaves the forest's boles; with a swishing roar the lofty giants hurl down deep into the world of the forest floor and through a million waving stalks of the richly perfumed boronia. The scent gets overpowering, yet the bushmen toil at the "Jarrah," or "Karri" logs that the mills may be fed. Do the gum trees "Jarrah" and "Karri" (*Eucalyptus marginata*) and (*E. diversicolor*) yield honey?

Yes, but it is strong-flavored and dark; but there are other "gumtrees" that yield heavily, while the quality is excellent, the "Yate" tree (*E. cornuta*) especially.

In spring there is the ubiquitous "Cape weed" (*Cryptostemma calendulaceum*) to gild the fields and the pockets of the apiarists, while nearer the south there are the glorious crimson-



The "Gray Gum" Eucalyptus

flowered "Red Gum" (*Eucalyptus calophylla*) "Flooded Gum" (*E. rudis* and *E. decipiens*), West Australian "Blue" Gums (*E. megacarpa*) and hosts of other plants too numerous to name.

Yet there are few beekeepers in "The West." Generally spoken of as a dry climate, in the coastal areas the wet is the chief drawback.

It is a young country, very young, indeed; but it has immense possibilities before it, and, as we have already remarked, it is, in the main, untouched, from the apiarists' standpoint. The climate is refreshing and most who have visited "The West" either on business or pleasure, desire to return again. Its vastness is difficult to comprehend, but that very extent holds out promise of prosperity for the hundreds of thousands who must eventually reside there.

(To be continued)

Control of Swarming for Comb Honey

By F. R. Smythe, D. V. M.

WHILE claiming no originality for this method, it being the culmination of the various technique used by Doolittle, Geo. W. Stephens, Dr. Miller and many other unselfish beekeepers, which I have sifted out of their numerous articles in the last twelve years, plus a great many experiments, I submit it to the beekeeping fraternity for what it is worth, hoping they can suggest some improvements.

Being employed by the U. S. Government as a Veterinary Inspector, and not having much time to devote to the bees, I was compelled to adopt some plan to control swarming in the production of comb honey, and after trying a great many methods, I have adopted the following:

During fruit bloom (if in single story) put on full depth hive-body with full drawn combs **above** on all **strong** colonies; if not strong, unite so they will be (if in two-story put top body on bottom, and bottom body on top), as the kind of colonies I keep will, in this locality, swarm during fruit bloom, even if they have four full-depth bodies, if I leave the brood on top till it becomes congested.

Just before the main honey-flow put top body down on side, after preparing two bottom-boards by cutting a space 5/8x5 or 6 in. in one side of each, equal distant from each end; tack piece of queen-excluder zinc on one of the openings.

Put best frames of sealed brood in this side body, place queen and other frames (be sure to have some unsealed brood) on old stand, put two-comb supers on with bait sections in top one. Close front of side brood-chamber. Put on Excelsior or Ventilated gable cover on side hive, but give ventilation by raising back and top of side brood-chamber about one-eighth or three-sixteenths inch with a strip of section or small wedge.

About every 10 to 14 days switch brood to side hive. I generally take the three outside frames from the side hive, then put two frames from parent hive into side, then as I take one from side hive I put one from parent hive, of course keeping lookout for queen, putting her back in parent hive with frame she is on if it contains, as it usually does, unsealed brood. If the queen has run over and is on a sealed frame, I stand it to one side until done, then shake or brush on top of frames of parent hive. If running for extracted, put on excluder, if for comb no excluder is necessary.

This plan was perfected for comb honey production, but is worth while in running for extracted.

This method will, in this locality, absolutely prevent swarming, give 50 per cent more comb honey and of better finish, 100 per cent increase if wanted, after having the use of an extra strong colony for honey production; no nuclei to fool with other than queen-mating nuclei. I am working on a scheme to raise queens in this side hive.

Important Suggestion Derived From Experience

1. Have good, substantial hive-stand wide enough to hold two hive-bodies; be sure to have it level sideways and see that it does not sag in the center to leave space for bees to get out.

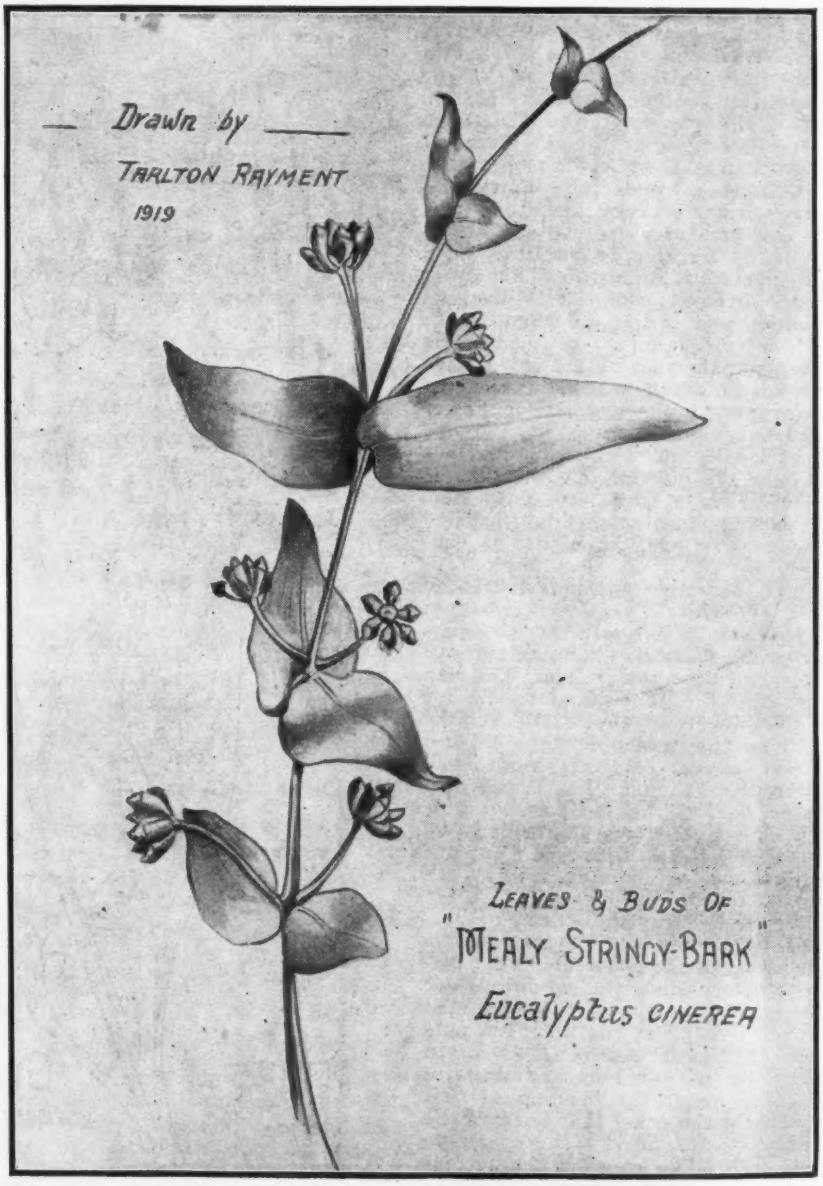
2. Bend excluder zinc thus:

and tack well inside and on top of side strip of bottom-boards after cutting out so zinc will go down flush with side of bottom-board.

3. Put excluder zinc always on the same side, right or left, so as to have them standard.

4. Stop entrance of side hive so bees will have to go through parent hive.

By putting comb in body you put above, and plenty of honey in lower body, the queen spreads the brood-nest upward and the bees in carrying the honey above for brood-rearing stimulate the same as a heavy honey-flow. I generally see that they have at least four Langstroth frames



The "mealy Stringy-Bark" Eucalyptus of Aust-alia

of honey in lower body (more will do no harm), two on a side.

If I want increase, after the main flow, or a few days after making last transfer, I generally make two. If I make increase three, the last one about August 1, set side hive on new stand and give, after two days, a ripe cell, or better, a laying queen.

In my opinion the primary cause of swarming is a preponderance of young bees in the brood-chamber.

Have young, prolific (not over 2 years old) queens from a gentle strain of Italians.

This method requires some work (not as much as cutting cells, and no sulking by the bees), but will produce more returns from a small apiary than some of the larger ones I know, this being especially desirable at this time of food scarcity.

And in this locality absolute control of swarming.

Cincinnati, Ohio.

Honey Selling

By Edward Hassinger, Jr.

WITH honey producers organizing as they are, it seems that honey advertising should be conducted along an organized line; that is, advertise honey in general with illustrated and printed placards, telling how to use honey to flavor and sweeten ice cream, all kinds of berries, salads, cold and hot drinks, and in fact any food that needs flavoring and sweetening. These placards should be made short and to the point, such as:

FLAVOR and SWEETEN
ICE CREAM
HONEY

A special one for ice cream parlors could be something like this:

Try our
HONEYBEE HONEY
SUNDAE
IT'S DELICIOUS!

Every ice cream parlor and soda fountain in the country should have two such placards in view, and honey with a good flavor supplied on trial if necessary, for each place.

Every grocery could have one like this:

FLAVOR and SWEETEN
BERRIES and SALADS
WITH HONEY.
We sell it.

The placards could be printed by some company interested in placing honey before the public, and print them as reasonable in price as possible; then advertise them in the bee journals, and supply manufacturers could also list same in their catalogs.

State and County Beekeepers' Associations could spend all surplus funds for such placards and buy them in large quantities and distribute to the individual beekeepers for distribution, or have one or more of the officers of a local association assigned a certain territory to distribute the placards.

Special placards could be gotten up for schools in connection with bulletins teaching the value of honey and its uses in cooking and baking.

Suppose the editors of the American Bee Journal and some advertising specialist agree on the proper words to use and then thoroughly advertise the proposition to bee-keepers and take orders with the understanding that if the orders are large enough collectively to warrant printing same in large quantities, then same would be printed and orders filled.

Hortonville, Wis.

A Few Reasons For Keeping Records

By Florence B. Richardson

WHY is it that more beekeepers do not keep records? How do they know the lineage of a queen in a certain hive?

All these things are definitely known only when true records are kept. Many say, "Oh, I don't have the time to fuss with that kind of business; but the same person will find the time to "fuss" with a colony whose former record, if on file, would tell that it would never make a producer. The time thus spent could be made much more profitable if employed in the business of record keeping. The beauty of it is that there is no necessity for guess work. When one has only a few colonies it is easy to keep the performances of each one in mind without the use of pen or pencil; then, too, there is an enthusiasm which does not allow one to forget. When, however, the number of colonies gets to the point where it is a business instead of a hobby, there is something more to remember, and the aid of a record is a decided advantage.

The field notes may be only the sketchiest, but if interpreted after the day's work is done, there need be no mistakes. A small block of paper that will fit into the ordinary overall pocket is really the handiest, as after the work of the day is completed the leaves can be torn off, taken to the house and transcribed in a few minutes, while the block remains in the pocket to be used the next time it is needed. A short stub pencil attached to the operator with a string is the handiest arrangement to save hunting for it when in a hurry.

The bee business is, today, more than ever before, receiving attention from all classes of people, and if a business is worth going into at all it must be run on a business-like basis. We would think it sheer folly for a man or a woman to go into the dairy or poultry business without keeping records. Not only general records, but itemized records of each individual or pen. Why is it not as necessary to know the exact value of our colonies of bees, not only collectively but individually? If we have a cow or a hen who is not paying her way or is diseased, do we tolerate her? Certainly not. We either sell her or bury her. With the bees we do not have to use such extreme measures, for it is generally possible to introduce new blood from a high-producing colony and within a reasonable length of time have a greatly improved colony where there might have been an empty hive.

An outbreak of disease can be checked much sooner and with more surety if the record of the colony is known, and there is also less danger of leaving a colony to its own devices, if a record is kept, as in going over a colony's work the time since the last overhauling will be noticed and a special effort made to check up on it soon.

A small card index can be purchased for less than two dollars a set of cards, lined to receive entries and cut to fit the box, also a numbered index can be bought for a small additional sum. More cards can be added at any time and the records are continually on file. A few minutes' time will fill out a card, either on a typewriter or by hand. The initial expense is small and the ultimate results are large.

In a well regulated apiary there are two sets of these records, the ones at the yard and the one in the card cata-

The small honey sign is the cheapest mode of selling honey locally

log or other systematic holder. The set at the yard may be on cards strung on a heavy string or wire, which can be attached to the cart or other carrier of tools in use. If strung in order, this form of record is simple and convenient to use, as a leaf at a time is turned, like a calendar. Some people keep a sort of record of queenless colonies, yet none after the colony is in good working order again, while others simply mark the hive so as to watch it during the requeening process (if they don't forget.)

I believe everyone who keeps records has a code all his own, as every little while we hear of someone who has at last perfected a system of quick notation which is quite the finest thing that has ever been used. There are a few signs used by everyone and a code of any kind is only good if it can be read after it is—maybe not quite cold, but at least lukewarm.

A few of the most used terms, abbreviated, read: ex. bd. for excluder-board; brd. for brood, fr. for frame or frames, ql. for queenless, col. for colony, div. for division or divided, ext. sup. for extracting super, hv. for hive, bb. for bottom board, cv. for cover, e for eggs, l for larvæ, foun for foundation, hon for honey. Various combinations are made with the characters, but when put onto the final card almost all words are written out in full. A card in the little catalog would read something like this:

1918. Colony No. 15.
May 2—Gave excluder board. Gave 2 frames e&l to No. 6.
May 6—e&l in top. Shifted bodies.
May 20—2 hatched cells in top. Strained bees, no queens.
June 30—8 frames of honey.
July 14—5 frames of honey.
July 22—3 frames of honey.
Aug. 10—2 frames of honey.
Sept. 29—In fine shape.

Dr. Miller has for many years been advocating and practicing the keeping of exact records and in all the bee world there can be no busier person than our genial ever-ready help in times of trouble and doubt, Dr. C. C. Miller.

These are only a very few of the many arguments in favor of keeping definite records, but their reasonable use will appeal to all modern and progressive beekeepers.

Hughson, Calif.

Spanish Needle for Winter Stores

Knowing that your bees are located along bottom lands, and that you, no doubt, gather quite a little honey from Spanish needles some seasons, we are writing to ask what your experience has been in wintering bees on this honey.

In your opinion, about how many colonies would it pay to move a distance of 12 miles to a 60-acre field covered with a very heavy growth of Spanish needle? The plants are about 3 feet in height now, and will not bloom for some time to come.

We are well equipped for moving 60 colonies at a load, including covers, hive-stands and alighting-boards. Roads are of the best and hauling is done by auto truck.

Minnesota.

We have never had any trouble in wintering bees on Spanish-needles honey. The kind we have is named "bidens aristosa" by the botanists. There are some 15 different kinds of "bidens" described by the botanists, some of which yield no honey.

I would think that 60 colonies would do well on such a field, especially as there would probably be similar fields in the vicinity. However, the moving of bees is always more or less trouble and it pays only when there is positively no hope of any crop in their home locality. We have moved bees for the Spanish-needle and persicaria crop and had good success. We would suggest that you try it on 60 colonies this season and, if it pays, increase the number another year.—C. P. D.

Introduction of the Honeybee to California

By J. S. Harbison

THE introduction of the honeybee into California was an important event, and engrossed a large share of public attention; wherefore, it is peculiarly appropriate to preserve as full a record of the transaction as possible.

The following letter from one of the earliest and most successful apiarists of this State, contains an authentic account of the introduction of the first bees in California, as well as the success attending their first five years' cultivation in San Jose Valley.

San Jose, Jan. 11, 1860.

Mr. J. S. Harbison:

Dear Sir: Yours of the 26th of December, propounding certain inquiries, has been received.

The first bees imported into California was in March, 1853. Mr. Shelton purchased a lot consisting of 12 swarms, of some person to me unknown, at Aspinwall. The party who left New York became disgusted with the experiment, and returned. All the hives contained bees when landed in San Francisco, but finally dwindled down to one. They were brought to San Jose and threw off three swarms the first season. Mr. Shelton was killed soon after his arrival, by the explosion of the ill-fated steamer, Jenny Lind. In December, two of the swarms were sold at auction to settle up his estate, and were bought by Major James W. Patrick, at $105 and $110, respectively.

Mr. Wm. Buck imported the second lot in November, 1855. He left New York with thirty-six swarms and saved eighteen. I purchased a half interest in them. I also, in the fall of 1854, bought one swarm of Major Patrick, from which I had an increase of two.

Mr. Buck returned East immediately, and arrived in February, 1856, with forty-two swarms, of which he saved but seven. Our increase in 1856, from the twenty-eight swarms, was seventy-three. We also had about 400 pounds of honey in boxes, which we sold at from $1.50 to $2 per pound.

Mr. Wm. Briggs, of San Jose, brought out, in the spring of 1856, one swarm, from which he had an increase of seven or eight swarms the following summer.

The above were the only importations I know of prior to the year (spring) 1857, which covers the ground of your inquiries.

There are in our county at this time about one thousand swarms.

Very respectfully, etc.,
F. G. APPLETON.

The first hive of bees ever in the Sacramento Valley was brought from San Jose in the summer of 1855, by Mr. A. P. Smith, the eminent nurseryman of Sacramento; they, however, soon died, which gave the impression that bees would not do well in this vicinity.

In this belief I did not concur, and

On top of the honey-house, a sign that can be seen and read for some distance

therefore took measures to test the matter further.

In the fall of 1855 I sent East and had one hive of bees brought out, which arrived in Sacramento February 1, 1856. Though most of the bees had died or escaped from the hive during the passage enough remained to prove that by careful handling they could be imported with little loss, and that they would increase and make large quantities of honey when here.

I left San Francisco May 5, 1857, on board the steamship Golden Gate, on my way east, for the purpose of preparing a stock of bees for shipping to California.

Sixty-seven colonies were prepared from my own apiaries, situated in Lawrence County, Pennsylvania.

They were taken to New York and shipped on board the steamer Northern Light, which sailed from that port November 5, bound for Aspinwall.

The bees were put on board in good order, were placed on the hurricane deck, kept well shaded and ventilated, and arrived at the latter port on the 15th of the same month, being ten days from port to port. Having arrived at Aspinwall in the forenoon, and ascertained that no passengers or freight would be sent forward before the next morning, I obtained permission to open the hives on the company's grounds, and let the bees fly during that evening, which greatly relieved them, and contributed to their health during the remainder of the voyage.

The hives were closed up and placed on board the cars, crossed safely to Panama, and re-shipped on board the steamer Sonora, which sailed from that port on the evening of the 16th, bound for San Francisco, where she arrived on the evening of the 30th.

(There were other importations of bees made during the winter of 1857 and 1858, a large proportion of which died.)

The bees had ample stores within their hives, before they started, to last them through their long journey. I neither watered nor gave them any additional food during the whole trip, except what they obtained while flying out in Aspinwall.

During each day's confinement the bees labored incessantly to gain their liberty, but as soon as it was dark they always became quiet, and remained so during the night.

At San Francisco the bees were transferred from the Sonora to the steamer New World, and landed in Sacramento on the morning of December 2, 1857, thus terminating a journey of 5,900 miles, which was at that time the longest distance that bees had been known to be transported at one continuous voyage.

To the officers and agents of the various transportation companies, over whose routes I passed from Newcastle, Pa., to Sacramento, Cal., particularly Mr. J. F. Joy, agent, Panama Railroad Company; Captain Tinklepaugh, of the Steamship Northern Light, and Captain Whiting, of the Sonora, I am indebted for their valuable and efficient aid in securing a safe transit, and probably the most successful shipment of bees ever made to California.

On opening the hives, I found that considerable numbers of bees had died in each, and that in five all were dead, having been destroyed by worms which had hatched on entering the warm climate, from eggs laid by the moth previous to starting. The combs were entirely enveloped in webs containing the worms, and were a perfect ruin. A few worms were found in each of the hives containing living bees, but were soon exterminated.

Some hives were found to contain so few bees that they were united with other weak ones, till the number was reduced to fifty. In the latter part of January, 1858, I made a discovery which has since been verified in a number of instances. All the bees in two hives swarmed out, leaving them entirely deserted. On examining, I found young brood; the combs were clean and healthy, and each hive contained some six or eight pounds of honey. But it was nearly all sealed up, only a few cells containing honey being open.

Loading comb honey graded by Colorado Honey Producers' rules. A typical scene of several Association cars getting ready to ship

The cause of their deserting was then a mystery, as they had apparently all the requisites to do well.

I finally suspected that, owing to their long confinement and frequent passing over the sealed surface of the comb, it had become glazed so that the bees were not aware that they possessed so ample a store.

(In the spring of 1859, and particularly the present one, 1860, I have known the bees (California raised) from a number of hives, to leave in like manner. The only difference was that the hives were not over half full of combs. But these were full of honey and tightly sealed, like those before mentioned.)

Acting from this belief, I at once, with a knife, uncapped a portion of the honey in each remaining hive. This was repeated twice a week for the two following ones, and as the honey became scarce, feed was given to the most destitute. The result was that no more hives were deserted.

There was no indication of disease of any kind existing in any of them. Hence there is no doubt of the above being a cause of bees deserting their hives. The stock was still further reduced by sale, so that thirty-four hives of bees remained on the first of April. These were increased to one hundred and twenty, most of which were sold in the summer and fall of that year.

Again, on the steamer of September 20, 1858, I returned East for the purpose of transporting another stock, which had been prepared for that purpose during the previous summer. On the 6th of December, in company with my brother, W. C. Harbison, I sailed from New York with one hundred and fourteen colonies, and arrived at Sacramento January 1, 1859, with one hundred and three living. Of this importation sixty-eight were from Centralia, Ill. The remaining forty-six were from Lawrence County, Pennsylvania.

Owing to the lateness of the season of shipping, and unfavorable weather during the first three weeks after our arival, we were only able to save sixty-two out of the whole number; these, together with the six good hives remaining from the previous year, we increased to four hundred and twenty-two colonies, including the sixty-eight old ones. Three hundred of them filled standard hives and the remainder averaged half full.

The increase was all made on the artificial principle (as laid down in this work). Not a single natural swarm issued from any hive during the whole season. I also formed a large number of colonies, for different parties in Sacramento and vicinity, which were attended with like success.

During the time between October 1, 1858, and April 1, 1859, there were shipped from New York for California, over one thousand hives of bees, not over two hundred of which survived on the 1st of May of the latter year.

All but three of the parties engaged in shipping them lost money by the operation, many of them being unacquainted with the business.

Of the modes of importing bees to California, the most novel was that of Mr. Gridley, who brought four swarms across the plains from Michigan, placed in the rear end of a spring wagon. He arrived in Sacramento on the 3rd of August, 1859, with them, in good condition. His plan was to feed them, and in addition, stop occasionally in the afternoon and allow the bees to fly out and work till dark, when they were closed up, to resume their journey on the next morning. This was repeated from time to time, as they required their liberty.

Notwithstanding such disastrous results attending the previous year's shipments, there were upwards of six thousand hives of bees imported during the winter of 1859-60. They arrived in better condition apparently than those of previous years; yet, owing to the fact that large numbers of them were infected with the disease known as foulbrood prior to their purchase and shipment, together with the effects of so long a voyage, probably one-half of the whole number were lost. Many of the remainder have since died, or now linger in a diseased condition, which is infinitely worse for the parties owning them than if all had died at once. Thus the result has been bad for all concerned; for, while some have lost their money, others have injured their reputation, besides paralyzing for a time an important branch of productive industry.—Beekeepers' Directory.

Soldering Honey Cans

By Dr. A. F. Bonney

I WAS wondering how many beekeepers understand the art of soldering tin, copper and galvanized iron, and deciding, after some thought that they are just ordinary humans, I approached some other mere men with the question. Not one man in a hundred had the least idea of how to proceed; therefore I assume that about one per cent of beekeepers understand it.

The things required are a soldering "iron," which is a chunk of copper on the end of a piece of iron rod, which, in turn, is driven into a wood handle; a bit of soldering fluid, which consists of scraps of zinc dissolved in muriatic or hydrochloric acid. Reduce to small pieces a piece of zinc sheet about 2x4 inches in size, and put it into a large-necked bottle which will hold about four fluid ounces. When ebulition ceases, fill the bottle half full of water and you have the standard flux used by tinners.

To solder galvanized iron, it sometimes becomes necessary to use the zinc and acid quite strong, or, in rare cases, full strength.

In soldering copper, pour about a teaspoonful of the flux into an earthen dish and add to it a piece of sal ammoniac about as big as a small bean. When this has dissolved it is ready to use.

Your soldering iron will require to be frequently "tinned," as some flames used in heating it destroy the surface at the point. At any time that this is required, file all four surfaces of the point. Have ready a large, flat piece of sal ammoniac and dig a shallow pocket in one side. Into this place a piece of solder and rub the hot iron into it when the tin of the solder will unite with the copper of the iron.

Another good, handy flux is a mixture of zinc chloride and vaseline. It is handy to use, as it does not spill.

Solder is a mixture of lead and tin, about half and half, and the best form to buy it in is wire, about as large as a knitting needle. There is no waste from using this form.

A surface to be soldered must be scraped clean and bright. Have the iron ready; wipe it clean with a swift rub of a damp cloth; then, holding the solder in place, touch the iron to it, when it will flow over the part to be mended. If a hole is too large to cover well, hold a dry cloth against it, inside the vessel, if you can reach it, when the solder will cover.

If, however, you have a very large hole to contend with, cut a piece of the same material you are working on. Let this be a quarter inch larger than the hole. Scrape one side, the one that is to be in contact with the dish, and also scrape the dish three-eighths of an inch around the hole, then smear on some solder. Apply the patch and lay the iron on it, when the solder will melt. You can, if you wish, solder around the edge of the patch to make sure; it will do no harm.

Buck Grove, Iowa.

Let us add that, unless the spot in the vessel to be repaired is as hot as the solder, it will be impossible to succeed in getting the solder to take hold. We found that out when we tried to solder a hole in the bottom of a large honey extractor with too small a soldering iron. If the soldering iron is large enough, it will heat the metal to which it is applied and bring it to proper temperature.

Very small leaks in honey cans, which are not discovered until after the honey is put in, may be stopped without emptying the can, by simply rubbing over the leak a small parti-

Colony of Bees in a young persimmon tree

cle of wax or paraffine containing about one-third grease or tallow, or enough to make it malleable. This trick saves a large amount of work in handling cans of honey.—Editor.

The China Tree or China Berry

THE wild China tree (**Sapindus Drummondi**), is also known as China berry, soap berry or umbrella tree. It is a very common shade tree in the southeastern States and is also found in the southwestern States to some extent. In Alabama it is a conspicuous feature of the grounds about the homes of rich and poor alike, quantities of the berries hanging after the leaves have fallen. It is cultivated to a less extent in Texas and California as an ornamental. The illustration shows blossoms and leaves. It is frequently mentioned as a honey-plant in the southern States, but is probably not sufficiently common in many places to be important.—F. C. P.

Bloom of the China-berry tree in Florida

Are Colonies Weighing Two Pounds On April 15 Profitable?

By G. C. Greiner

AT our annual beekeepers' convention in Buffalo, January 10-11, 1918, the above subject was brought up for discussion. Mr. Demuth, of Washington, D. C., said that a colony weighing less than 2½ pounds April 15, might better be set aside as useless; it would not pay to spend any time with it. On the other side, Mr. Hershiser claimed that very few colonies weighed over 2 pounds at that time in this locality, and yet gave big returns of surplus honey. Another well-known beekeeper of this State made the remark that he considered a two-pound colony April 15 a gold mine. This may be a little strong, but I know trom many years of experience that such a colony, under favorable conditions, is a mine of greenbacks.

The difference of opinion depends altogether on locality. My whole crop comes from colonies of that description; they either weigh naturally two pounds or less, or they are made so artificially.

It is not surprising, in fact nothing else can be expected, that beekeepers living in different latitudes do not always agree on all points of bee management. They have to adapt themselves to the conditions of their own localities, honey flora and climatic conditions being the main features. Even in the same localities and under the same conditions, all beekeepers do not see things just alike, but follow different plans and methods to suit their own ideas. It is the general belief that a hive full of bees in the spring will give better results in the line of surplus honey than one of these two-pound nuclei. I believe the same, but divide them.

Some time ago, at a social bee-talk with a prominent neighboring beekeeper, our conversation drifted to spring management. He objected to my method on the ground that his undivided colonies had more bees when the honeyflow came than my divided ones. Of course I agreed with him, but he was no little surprised when I explained that that was what I was trying to prevent. A large percentage of his bees are old, wornout fieldworkers that have outlived their usefulness as honey gatherers and exerting their last vitality with making preparations for swarming, while my bees, although fewer in number, are nearly all young, energetic workers, doing their level best at storing honey. It is the old stock that is bent on swarming; young worker-bees, the same as young queens, are less inclined that way. Consequently, I have practically no swarming, while he has to spend his time taking care of young swarms.

All beekeepers, especially comb-honey producers, know full well what a discouraging sight presents itself when a colony with one or more supers of partially finished sections on the hive sends out a swarm. Hive and supers are deserted by their working forces and all business is at a standstill. Treat them as we may; cut out the queen-cells and return the young swarm, hive them on the Heddon plan, or hive them on starters, foundation or empty combs, it is all the same; a certain time will elapse before they are sufficiently organized again to take up their super work, and by that time the best of the honeyflow may have passed.

The most convincing proof that colonies weighing considerably less than two pounds even as late as May 25, can be made profitable, is plainly demonstrated by the experience I had last spring. Early in the season I ordered, as a trial experiment, two 2-pound packages of bees with Italian queens, from the South, to be mailed May 10. But the breeders were crowded with orders and could not ship the bees until the 21st, arriving at my place May 25. About one-half of the bees in one package and one-third in the other were dead. The queen of the former proved to be all

right. She began to lay soon after she was released, but the other was no good; she never laid an egg. She remained in the hive one week and then disappeared, making the introduction of another queen necessary.

With the exception of a little patch of brood the size of a double hand, which I had given them when making the transfer from the shipping cage to the hive, neither had any outside help except an additional empty comb whenever they needed one. During the white clover flow both queens built up their colonies at an astonishing rate and by the middle of July the first one, that had lost the most bees, was ready for the super. The other, on account of the poor queen at the beginning, was a little slower in building up, but both colonies did remarkably well. Being so late in the season, I did not expect that either could possibly fill more than one half-story super, but to my surprise they even filled a second and the better one of the two a third one. I extracted about 90 pounds from the one and 60 pounds from the other.

This is not a very big yield, but we must bear in mind that both colonies grew from a little bunch of bees weighing only two pounds each when mailed from the South May 21, and both had unfavorable conditions to contend with—one by the loss of many bees and the other by having a worthless queen. Under more favorable conditions they would have done much better. At all events, the experiment proves that combless packages of bees shipped from the South by parcels post are not questionable undertakings. Under common conditions it is perfectly practicable to replenish depopulated beeyards in our northern latitude in this way and harvest a fair crop of honey the same season.

La Salle, N. Y.

Please Date Your Articles

WILL my fellow beekeepers please date their articles in the American Bee Journal? On page 405, December number, under the title "California Weather and Prospects," the writer says "this is Columbus Day." While this may be very instructive to the people of the United States, it is not of much use to people in other parts of the globe. Then some person comes along and says, "Now the maple is budding, etc., etc.," which no dobut, explains the period of the year to those "in the know," but is no guide to me. Why cannot they give the exact date? Then others would get some idea at what periods their seasons begin and end. Another rotten habit they have (and it is, I think, peculiar to the United States people) is to talk of five-penny nails and ten-penny nails, etc., etc. I have not the faintest idea whether these are 1x18 or 4x¼. If they would refer to the nails by size, as I have done every one would know what they meant. Nails here go by size, and I suppose they do with you, commercially. Two by ten means a nail 2 inches long by one-tenth thick, and so on all through the sizes. If one speaks of 1¼x17 he knows it means 1¼ inches long by one seventeenth inch thick, or a thin, small nail for frame nailing.

We are having a rotten season here. My western farms have so far given nothing and the season there will end in four weeks, although here it may go on for four months. We have done fairly well here and hope to get a fair crop before the season ends.

On page 406, American Bee Journal, you mention paralysis, or a resemblance to it, in Mr. Carr's apiary and also in yours. I had exactly the same thing in one of my apiaries at Glenbrook, on the Blue Mountains, but only in about 25 per cent of the hives. The ground in front was covered with bees crawling about unable to fly, and they had crawled up on stones and sticks in small bunches. Very few of the bees died and these conditions only prevailed for a few days. Apparently they all recovered and regained the hives. The weather was excessively hot and dry, being just before Christmas, and no flow on. One of my neighbors complained that the bees had taken charge of her preserving room and had sucked all the juice out of the fruit she was preserving. Looks as though my bees were intoxicated; were yours and Mr. Carr's?

MAJOR SHALLARD.

I. Woodburn, N. S. W., Australia.
March 2, 1919.

Major Shallard is right. We should date our articles. In the case mentioned the fault is probably with the management of the Journal. We can readily understand that people living at the antipodes, as far south of the equator as we are north of it, and whose summer is our winter, should be anxious—when they take the pains of reading beekeeping news from so far away—to know at what dates the crops reported are harvested. We must try to bear this in mind. It will be useful to our own people.

As to the naming of nails "five-penny" or "ten-penny," this is a distinctive United States classification, owing, they say, to the fact that a hundred such nails used to cost five or ten pennies, as the case might be. But if we must resort to less antiquated names, we should certainly use the most progressive, those of the metric system, instead of using inches, feet, ells, yards, rods, chains, etc. It is true that many people do not realize how exceedingly simple and convenient the metric system is. Our scientists use it, in spite of the popular prejudice against it. But as advanced a magazine as the Literary Digest sees fit to sustain the old system, by publishing (March 15, 1919) a map of the world showing China and Russia, and other backward countries, on a par with the British Empire and the United States in a continuation of old systems. We would be equally ridiculous if we were to argue in favor of the old gum or the straw skep as against the modern movable-frame hives, on the plea that the former were still the more widespread over the world.

We should certainly be proud that wide-awake men like Major Shallard, living as far off as Australia, should take enough interest in our contributors to wish to know the time of their honey harvests.—C. P. D.

Policy and Aims of the National Beekeepers' Association

By Chas. B. Justice,

IF the writer properly understands the object of the National Beekeepers' Association, it is that it may become an affiliation of all State, County or District co-operative marketing honey exchanges and associations throughout the United States, but that the affiliation shall have only regulatory powers. In other words, each district or state exchange of association will handle its own business as a complete entity within itself, and it should be incorporated on a firm contract holding its members together and developing the standards of quality, grading, manner of packing and selling of its products, and its membership in the National Beekeepers' Association should be by delegate properly accredited with the power and authority of the exchange or association sending such delegate, with the idea that the combined strength of all the State or district exchanges supporting the membership of the National would be sufficient to bring success to its efforts and determinations. It is hoped, therefore, that the National Beekeepers' Association might become famous in its worthiness for this name, for its higher services to the beekeepers in a national way, for its truly broad conception of the possibilities of the honey industry, and for its practical endeavors to attain a higher position for beekeeping among the industries, for its success in hastening the time of a more universal consumption of honey on the table everywhere, for having secured recognition of the importance of the industry by all national and state governments and actual assistance from the same through education, appropriations for extension work, and wise laws protecting the purity of our food and safeguarding the beekeeper in his work of production.

At the 49th annual convention of the National Beekeepers' Association, held in Chicago on February 19, the following resolution was adopted:

"Whereas, Your committee appointed yesterday under a resolution authorizing its appointment for the purpose of formulating and reporting a plan for the organization of beekeepers, realizing that the basis of such organization must be laid in the minds and hearts of the beekeepers themselves and must find its approval with them, respectfully recommend that a convention be called sufficiently representative in character to give weight to and command respect of its determinations; to that end be it

Resolved, That the Secretary of this Association be directed to invite representatives of all organizations of beekeepers, teachers of beekeeping

and members of the allied trades to meet at Kansas City, Mo., in January, 1920, for the purpose of formulating and adopting a plan and constitution for a National Association."

E. S. MILLER,
COLIN P. CAMPBELL,
CHAS. B. JUSTICE,
WESLEY FOSTER,
Committee.

Our first duty appears to be that of encouraging each district where honey is produced to organize their local members into strong marketing associations or exchanges, and to all such the writer fortunately is able to explain fully the workings of the California Honey Producers' Co-operative Exchange, a successful marketing association, whose members own or control in excess of 100,000 colonies of bees. He will take unusual interest in pointing the way to all prospective organizations, and will immediately furnish copies of the California Honey Exchange contract, by-laws and other data to all who inquire for same. He suggests that all societies now organized for other than marketing purposes endeavor to find a common ground and incorporate for marketing purposes as well. The benefits derived from the purchase of supplies alone will far exceed any cost of organization, and though the members may dispose of most of their honey locally, even selling it out themselves in a small way if preferred, the possible surplus will be taken care of by the exchange, and we are sure that they can arrange to keep their expenses within bounds; and it won't be long before the old custom of local selling in small quantities, with its attendant (though uncalculated) costs of time and effort, will give way to the new and more up-to-date commercial method of wholesale distribution, leaving the beekeeper wholly free for production, which is his specialty. The supply manufacturers welcome the greater volume of business procurable by them through the increased prosperity of the organized beekeeper. The California Honey-Exchange turned over business approaching $15,000 to one supply dealer alone during the past few months.

At first thought the beekeepers are inclined to believe that the independent operators are opposed to organization among the beekeepers. This is a mistake. All legitimate dealers and handlers of honey everywhere welcome co-operation among the producers, as its first achievement is to grade the honey and put it in a better container and to keep the junk honey off the market. The California independent honey dealers have welcomed the California Exchange, admitting that the Exchange over night revolutionized the package, something the operators had striven for without success for ten years past.

To all the officials of all societies, exchanges and associations throughout the United States, as well as independent beekeepers located in districts where 1,000 colonies of bees or more may be organized into one exchange, the writer suggests that you write to him if he can render service in explaining the benefits, conveniences and satisfaction of organization among beekeepers.

318 L. A. Investment Bldg.,
Los Angeles, Calif.

Controlled Mating—The Value of the Sire in Pedigree Breeding

By D. M. Macdonald

"THE old order changeth, giving place to new."

I have lately been seeing visions of future developments in the apiculture of the world. A beekeepers' paradise opens up before me as to the future which may be revealed to the eyes of the younger members of the craft. What led up to my dreams was a series of remarkable prices obtained for Polled and Shorthorn young bulls of the choicest strains. All around me, in the north-eastern counties of Scotland our farmers are at the top in regard to the possession of champions of both herds. At the recent annual sales young sires, not yet a year old, were disposed of at figures almost startling in these war times. One hundred pounds up to 900 pounds were quite common figures, and for the "plums" of the choice herds from one thousand to four thousand pounds was not uncommon. Blood tells, and these fancy prices were the result of "blue" blood, and careful breeding.

My aspiration is that a combination of queen-breeders will seek to emulate the doughty deeds of these cattle-breeders, and evolve a race of bees, or a strain of one or another of the best races, that will prove their breeding by results in their way as marvelous as these young sires of high pedigree. Who are prepared to center this union, and so prove themselves benefactors in beedom? Here in this country we work on too limited a scale, and continue so short a time absorbed in the pursuit, carrying it on as an avocation and not as a vo-cation, that little can be done in working for progress. Therefore, if at all, the duty of improving must be undertaken in America. You in the United States carry on the industry on such an extensive scale, your varied climate is so suitable all the year around for queen-breeding, and so many firms already devote considerable energy to breeding, mating and improving that there is a substantial foundation for future advance, on which the superstructure may be erected.

It may require Government aid to launch such a scheme on anything like an extensive scale all along the line, but there should be no difficulty in securing a grant in so democratic a republic, if the necessity for such a proposal is convincingly submitted to the powers that be. The present government apiary at Washington, working in unison with the already established firms turning out queens, all acting on well established formula in regard to breeding, could form the nucleus on which to build the complete structure working all over the Union, from the Atlantic to the Pacific and from Canada to Mexico—or, indeed, over the whole continent.

There can be no hesitation in the mind of any beeman to ascribe a very large share of our success in apiculture to the queens heading each stock, and the surplus taken of colonies, apiaries, States and the Union as a whole hinge on the question of breeding prolific mothers.

The proof of the pudding is the eating of it.

An enhanced price would be gladly paid, as it would mean that for a comparatively small initial outlay more bees, more honey and more money would be obtained, while the pleasure of working with such prolific mothers would give a new zest to the pursuit. Better queens will make better bees, better honey, better returns. Quantitively and qualitatively there is bound to be an improvement.

Is all this only a dream? Nay, verily! The design, the process, the evolution is only what has been going on steadily for many years in the Polled and Shorthorn herds alluded to above, whereby they have been improved by breeding and careful selection on well-marked lines until they have attained to such a state of perfection that they sell readily at the high prices—ten times the maximum obtained in my early days. It must be granted that man has more control over animals than over insects, but the rate of increase is in favor of the latter during a full year. Breeding with care and with intelligent selection has found to work wonders with bees, where the process has gone on for a long enough time. As a proof, witness what has been done in producing "All Goldens," "Three-banders" and "Five-banders." Color breeding to produce **the best** bee is a myth, a delusion and a snare. A beautiful exterior may produce softness, want of energy and a short life. I hope the splendid experiments recorded in last year's Gleanings have testified that improvement can be produced by pure mating. That would be a gulf bridged over, and this attained the whole system would be shunted on to the main line, instead of having a number of small trains running along on tiny branch lines, all leading along either parallel tracks or leading away in contrary directions—which is a simile comparable to the present system, or rather want of system, where isolated breeders work at present each for his own hand.

In every other walk of life the sire is the one who leaves the chief impress on the future generations. Pedigree in the sire enables the breeder to climb steadily up the rungs of the ladder of improvement. This is only asserting a well-known truth. The semen conveyed by the drone to the queen on her mating trip has an influence for good or evil on every egg the queen lays during her long or short life. A weak drone imparts the elements of weakness to his progeny. Drones must therefore be carefully bred, and if a test can be agreed upon only the strongest and most virile should be allowed to engage in the race for mating. Nature has provided an admirable test, but

man can still further winnow out the weaklings and put more strenuous tests still in the path of these marital warriors. I know, of course, that American breeders work and have worked for betterment, but that is not the point I am aiming at. Each now follows his own devices and works only on his own initiative. There is no concerted plan, union or combination. Each breeder now has his own aims, aspirations and deals. I would have the entire body act as one on well-thought-out lines, applying their abilities and energies on a systematic plan laid down annually by a breeders' conference. A later article will seek to demonstrate how this can be done.

Banff, Scotland.

Hiveless Bees

HANGING under the cornice of the court house at Visalia, Calif., are two big colonies of bees. The one came as a stray swarm several years ago and settled in an inaccessible position under the cornice. After a year or two of comb-building a swarm issued and settled in a similar position something like twenty feet away. The bees have been there several years, and from the size of the clusters to be seen from the ground below they must be very strong colonies. In the mild climate of California they do not apparently suffer any inconvenience from the exposure to the weather of winter.

During the short course at Visalia last winter these bees were the source of much curiosity on the part of visiting beekeepers. Hanging about 40 feet above ground it was impossible to get a very close view. One afternoon the sessions were adjourned to give everybody a chance to have a try at photographing the bees in their unique position. There is a large tree standing about 20 or 30 feet from the building. It seemed as though the top of the tree should furnish an ideal place to get the desired picture. Jay Smith was the most venturesome photographer in the crowd and with the help of the city fire department with their long ladders he was able to get a big start toward the top. However, in spite of the lift, he still had a hard climb to get into the desired position.

The two pictures shown herewith were taken by our associate editor from a second story of the building. One shows the combs under the cornice and the other a group of beekeepers at the foot of the tree who were watching Smith in his efforts to get a better position.

With the crowd of beekeepers standing around, the fire department with their ladders and the groups of people at the various windows, passersby were very curious as to the cause of so much commotion when no smoke was to be seen.

Twin Hives and Others

By Arthur C. Miller

THE twin hive plan suggested by Mr. Sladen in the American Bee Journal for April will doubtless attract much attention from the younger beekeepers, and some of the things he suggests that it may accomplish will probably be noticed by the older boys, but the plan is not new nor is it a panacea for beekeeping ills.

Away back in the early eighties, Prof. N. W. McLain, at Aurora, Ill., made and used a lot of such hives, and at the start he was very enthusiastic about them. I saw them in operation, listened to his explanations and later experimented with the principle, but it was disappointing, and like so many other hive schemes, it called for that most expensive item in honey production, "manipulation," in other words, "labor."

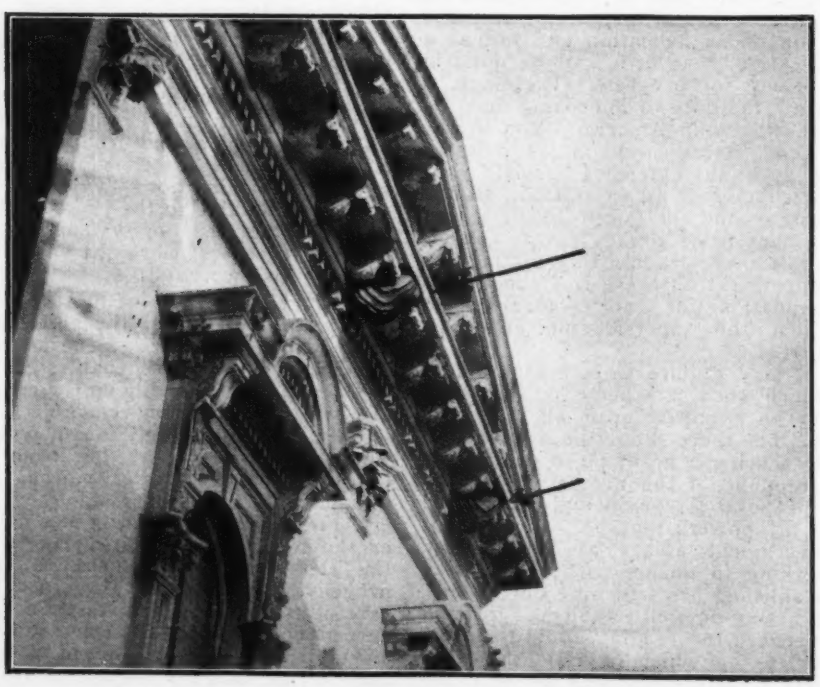
The "Long Idea" hive now receiving some attention was exploited by Gen. D. L. Adair in the early seventies and was designed primarily to avoid the necessity of lifting supers when it was necessary to get at the brood-nest. So good a beekeeper as the late O. O. Poppleton used many of them. They do avoid the lifting of supers, but the hives themselves are great, unwieldy things and possess the undesirable features mentioned by the editor.

Mr. Allen Latham took the "Long Idea" hive, put the entrance at one end instead of at the side, confided the queen to some frames at the entrance end, by means of a partition of excluder metal, and called it a "Let Alone" hive. He operated it on a minimum of attention plan, and in his hands it was successful until diseases invaded his yards, and I believe he is not now making any new ones of that type.

Hives have been devised to **force** bees to do certain desired things, hives for contracting, for expanding, for inversion, for all sorts of protection and all sorts of ventilation, for side storage and top storage, tall narrow hives, short broad hives, round and square and triangular; telescope joints, flat joints, beveled joints, entrances too varied to enumerate, until one wonders if it is possible to conceive anything new.

Just about two styles or sizes of hives remain with us after thirty odd years of use, the much-pushed Langstroth and the Quinby. There are variations of both, eight, ten and more frames of Langstroth and the same of Quinby. In judging the value of styles and sizes of hives, by their seeming popularity, one must be careful to consider why one or the other is mostly in use, whether it is due to intrinsic merit or to advertising. The Quinby hive has held its own unpushed through these many years, and now that its users are making themselves heard its use is spreading. (The "Jumbo" is for all practical purposes the Quinby, with the advantage of being an article "stocked" by the supply manufacturers). The Langstroth has never been stable, every few years seeing some variation, and now the press is filled with urgings for a two-story ten-frame Langstroth hive for constant use. This is better than any new type of hive, less costly to the beekeeper, but it is far from as cheap as a single-story deep hive. It is more expensive in first cost and more costly in operation and upkeep.

The two-story hive propaganda may "listen good" to the manufacturers with bodies selling at $1.06 each and frames at $6.50 per hundred and foundation at 85 cents per pound, but the honey producers must look out for their own interests, too. They must consider first costs and also operative costs. These things matter little to the back-yard beekeeper, but to the would-be professional they mean a lot. He must look sharply at the size of his invested capital with its resulting interest and depreciation charges, and he must also consider the labor cost in handling his hives. It makes a



Two swarms of bees in the court house cornice at Visalia, California

vast difference whether he can alone handle 500 or 1,000 colonies or must hire costly help.

It is obvious that the single-story deep Quinby or Jumbo hive is superior in all these things to the two-story hives.

Unfortunately for the craft, very many of the innovations in apiary appliances have been the result of enthusiasm, plus good propaganda, plus commercial possibilities. To prove this one only needs to follow through the bee press the growth and development of the sundry things now in use, and others once popular but now long forgotten.

All too often the sincere and honest inventor or designer was not a close observer and the deductions from such facts as were observed were erroneous. Examples of the statements in both of these paragraphs can be found all about us, but it is needless to cite them here.

During the past few years Dr. Phillips and Mr. Demuth have done much original work on the habits (behavior) of bees and their relation to practical bee culture and we already have beneficial results in their application to the wintering problem.

In his day Mr. Quinby was probably the closest observer and the soundest in his deductions of anyone. The conclusions he reached in hive proportions and sizes have proved sound for over fifty years. And the users and advocates of the Langstroth hive are beautifully proving for us that it is not right in proportion or size.

It is well that hives should receive our careful consideration, but before we go to inventing new ones let us see if they are new, and before we revive old ones let us see why they were discarded. They may have had merit and needed only a better understanding of bee behavior in using them. And before we ask the editors to consider reams of manuscript, and use up pages of costly space in their papers, let us each inform ourselves of what has gone before, both in mechanical appliances and in operative practices. Our old and tried things may be good enough, but our practices may not be right, perhaps based on mistaken ideas of bee behavior or from wrong deductions from observed facts. Some of us may have to depend on others for the careful observation and the accurate deductions and some of us may have to depend on others for the history and the editors are often too busy to dig it out, so we must all help.

Providence, R. I.

Honey Storage

Mr. Morley Pettit:

Dear Sir—I am obliged to put in a settling tank system, and as I understand your new central plant is thus equipped, I would be obliged if you would tell me the size of tank you use, the material out of which it is made and whether you have it above the extractor and pump up the honey, or whether it is below the extractor, so that you have to hoist the honey from the basement after it is put up in containers. I hope you can give me the above information, and also the number of seasons in use and the drawbacks you have found so far. Also, if tanks are made of galvanized iron, give the gauge.

Ontario.

Our storage tanks for honey are 33 inches in diameter and almost 5 feet high—as high as two sheets of galvanized iron would make them. The diameter was determined by the width of ordinary doors through which they might have to be taken. The iron is gauge 24 or 22, I am not sure which. The first one was made of 26 gauge iron, and was considered too light, although it is still doing duty. Each has a close-fitting lid of the same material, and a good large gate of the most approved type, opening directly upward and not turning on a side pivot as the cheaper ones do. I refer to the ones used on extractors, which are all right for size, but are not at all satisfactory for controlling the stream from a tank holding nearly two thousand five hundred pounds of honey as these do.

We consider it requires at least three days in ordinary summer weather for the honey to settle satisfactorily, so you should have enough of these tanks for at least three days' extracting. Against the partition which separates the honey room from the extracting room we have built a bench 3 feet 3 inches high for a row of tanks. This leaves just enough space between their tops and the ceiling for a man on a step-ladder to lean over and skim them. Then, for filling, the scales are set on a table at which the operator can sit in comfort without stooping to the floor, as would be necessary were the gates lower down. The honey pipe from the pump rises to the ceiling in the extracting room, goes through the wall and delivers the honey over the top of the tank. It is galvanized iron gas pipe, 1 inch diameter, with rubber hose on the end for changing from one tank to another.

By the arrangement described above as compared with gravity delivery from extractor to store tanks we save much tiresome lifting, and stair-climbing, at a slight expense of engine power. I think it was in 1913 we started using the pump and gravity clarifying. We used the large tanks exclusively first in 1916. The pump hastens granulation, and if allowed to run without enough honey to exclude air will churn the honey; but this is easily regulated. Gravity clarifying is not sufficient for honey which is to be sold liquid in glass; but for bottling it should be heated and is easily strained in connection with that operation. The large tanks as described are an unqualified success, so far as we can see at present, and extracting, as we do, all at the home place.

MORLEY PETTIT.

Ventilation of Hives

I am building my own hives and supers, but buy factory-made Hoffman self-spacing frames 19⅞ in. top-bars. The hive-bodies I build are 2½ inches longer on the inside than the frames, in order to give me space for double walls at both ends of the hive. I have a half-inch air space from the outside end walls and then nail a half-inch thick board for support to lay the frames on. Both these inner walls are raised 1 inch from the bottom-board for letting the air pass to and from the hive. Both outside end walls have one inch hole bored in the center and these holes are covered inside with wire screening to keep robber bees from entering the hive. These holes are also handy for lifting the hives.

The idea is that when a cold wind strikes the hives (I face all my hives south), it cannot penetrate directly

Group of beekeepers watching photographers in their efforts to get pictures of the bees

into the broodnest, but the air, on striking the inner wall through the 1-inch hole in the outer wall is compelled to go either upward between the ends of frame or is forced downward through the 1-inch opening near the bottom-board into the hive.

On chilly days in spring or fall I close either one or both holes with corks, according to the temperature outside.

Spring robbing can thus be prevented by reducing the entrance so that only two bees can pass, as one can depend on the end ventilation.

I have had great loss in cellar wintering with sealed covers with no other ventilation than the entrance; the hives being icy in frosty weather and wet in milder weather, the result was many dead bees, moldy combs and sour honey. Since I adopted the end ventilation, which I can regulate with corks, I found that my hives kept dry with no moldy combs in spring. I had the entrance opening reduced to ⅞x1 inch with no detriment to the bees.

If my system finds the approval of Dr. Miller and the editor of the American Bee Journal, I intend to build hives with inner walls and ventilation holes on all four sides. Were it not for the dying bees in cellar the entrance could be blocked up entirely on such hives and bees could be kept in a lighted cellar.

An idea is revolving in my mind to build a square hive which will hold 13 Hoffman frames, 19⅛ in. top-bar, and in which the frames could be placed either crosswise or lengthwise. Such hive could be placed crosswise on the bottom-board in winter cellaring to keep the bees from direct striking of the cold air from the entrance. We find that bees usually cluster in the front of hive and above the entrance to avoid the direct draught of cold air which first rushes to the rear wall before it divides upward; hence the rear part of the hive must be colder than the front.

Of course, all my hive parts being interchangeable, I transfer all my bees in the spring to different hive-bodies, that is, I take an extra hive-body which was standing idle during the winter, scour and clean it, take comb after comb with bees out, scrape off propolis, brace and burr-comb, and set the frames and bees in the cleansed hive. The bees which hung on the old hive are brushed off in front of the new hive. In doing this performance one can find out the condition of combs, bees, honey, brood, and even see the queen by chance. Then I clean the hive I took from the first colony and proceed with the second colony in the same manner as with the first. On a sunny and warm day a man can clean and transfer twenty colonies, and one will be surprised to see and hear how comfortable the bees feel in the cleansed hive. We are saving the bees a great deal of extra work, and, besides, prolonging their lives, which means more rearing of brood.

I must mention that one must be on the alert that no disease is prevalent in his bee-yard in order to go into such procedure of spring cleansing.

Now I want Dr. Miller to make opposing suggestions to my ideas, as I am a beginner in beekeeping and would like to hear also from experienced beekeepers, if they have any criticism against my method of building hives.

Minnesota.

I would strongly advise that you try your plan with only a few hives—perhaps only a single hive—for some time before making all your hives in any new way. One reason is that if you continue in the business many years you may want to sell some of your stock, and bees in odd hives do not have a ready market. Another reason is that only after a full trial can you tell whether what looks like an improvement is really so.

You intend a kindness to the bees by making the entrance indirect, so that robbers cannot easily enter. I fancy I hear the bees saying, "Please don't do that. Anything of that kind doesn't really make any difference to the robbers, because a strong colony, such as we are, can easily keep out robbers, but it does make a difference to us, giving us a little more trouble to pass in and out, and if you figure up how many times that happens you will see it is quite important."

The Langstroth hive was originally made with a portico, but this was later discarded because it made a nice refuge for spiders. Your arrangement may suit the spiders still better than the portico.

Opening and shutting of holes with each change of weather will probably be found too troublesome to be continued.

If your hives are icy in the cellar, no change in construction will remedy the trouble, but some means should be used to make the cellar warmer.—C. C. M.

(We used to close inch holes with wire screen also, but found out that the bees glue them up entirely with propolis and that they usually do so with any opening through which they cannot pass. Examine the inch holes that you have covered with screens, and see whether they are not already partly closed.—C. P. D.)

Moths

I see that Dr. Miller, in his reply to "Missouri," page 202, is rather inclined to be a little skeptical as to there being moth worms that will withstand freezing. But I can assure the Doctor that there is a species of the bee-moth whose larva will survive even frost, whether they be "right-minded" or not.

The worm is small, being from one-half to five-eighths in. long, and from one-eighth to three-sixteenths in. in diameter, and it is a pinkish color.

It was in the summer of 1914 that I was infested with this plague. I had a lot of supers that were not in use that year, and those worms got into them. They cover the face of the comb with a web, which is quite easily brushed off with a whisk broom. They did not do the combs much damage that summer, but worked chiefly upon the pollen that was stored in them. So I didn't pay much attention to them that season. I was positive in my own mind that I would be rid of them the following spring. So in the month of May the next spring, when I wanted some supers to put on some strong colonies, I thought to put on some of the supers with the worms in them, and let the bees clean them up.

Now those supers were stored in the loft of the honey-house, where the temperature goes to at least 20 degrees below zero. You can imagine my surprise when I examined those combs and found live worms. I was at a loss to know whether those worms were hatched from eggs that spring, or did they survive the frost? But I was rather inclined to the latter opinion. I tried to get rid of them by fumigating with sulphur and disulphide carbon, but both failed to destroy the worms. So I was at a loss to know what to do with them. However, I worked away with them that summer, brushing them off occasionally and re-opening them down as best I could. But in spite of all I did they destroyed quite a number of my combs, as they ate up the comb after the supply of pollen gave out. As I was not positive that those worms did lie in a dormant condition during the winter, I decided to make an early examination the next spring, so as to be sure. So acordingly the first week in April, after a few warm days (while the snowbanks were yet in the corners of the fences) I made an examination, and I found the worms were alive and ready for action.

Now, those worms were not in cocoons, but on the face of the combs right where they were when the cold weather stopped them, but as soon as they were thawed out they were ready to go to work.

So, when I failed to get rid of the worms by freezing, and with sulphur and sulphide, I decided to try starvation; accordingly I rid my honey-house of all combs and got them all into use, and in this way I got rid of the worms and have not been troubled with them since; that was in 1916. If I am ever troubled with them again I will send Dr. Miller a sample of them for him to experiment with. I might say that I think had I used the disulphide carbon strong enough it would have been effective. A. M. BRIDGE.

Ontario.

This seems to be something entirely new. I have never seen but two kinds of wax-moth, beside the common one, the little fellow that seems to stay at the septum. Of this latter I have seen but a few examples. You will not see the worm on the surface, but will see two or three mature bees in adjacent cells apparently trying to get out of their cells and unable to do so. Then, when you pull out the bees you will find the little miscreant at the bottom of the cells, holding the bees there by its web.

I hope this non-freezable variety will not become common.—C. C. Miller.

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to DR. C. C. MILLER, MARENGO, ILL. He does NOT answer bee-keeping questions by mail.

Queen Excluder—Two or Three Eggs in One Cell

On May 17 I put an extracting super with four drawn combs and four frames with foundation over wire excluder, on what I thought my best colony.

May 18 bees had taken possession of super.

May 19 I found one comb, a drawn comb filled with eggs—two and three eggs in the same cell—yet hardly any cell skipped. Surely a fertile worker at her business, and a queenless colony, I thought, and the colony must be broken up. Yesterday, May 21, I examined the brood-chamber. I found it full of worker bee-brood, a drone-cell here and there, eight of the ten frames covered with bees—no queen, however, to be found. I was mystified for a while. Then I took out that comb of the extracting super—and here along comes the queen, and very unconcerned, indeed.

The wire excluder shows no apparent defect. I removed the excluder to allow the queen to go to the brood-chamber unhampered—which she did almost at once. I put the super on without excluder, thinking what the queen did once she might do again, and in her efforts to get through the excluder harm may come to her.

1. What shall I do in regard to that super?
2. Shall I forgive the queen this time?
3. Why did the queen lay several eggs in the same cell?

An answer through the American Bee Journal will be appreciated. MINNESOTA.

ANSWERS.—1. A little hard to say. The question arises whether the queen was at fault or the excluder. It may be that there was some defective spot in the excluder through which the queen might pass, although close examination might not discover it, in which case if you should return the super over the excluder, the queen might happen not to hit the same spot again. On the other hand, the excluder might have been perfect and the queen might have an undersized thorax, in which case she would be pretty certain to go through the excluder again. Two eggs in a cell, while there were no doubt plenty of empty cells, is somewhat against her, although I have known queens that for a time did bad work in having a plurality of eggs in a cell, and afterward conducted themselves with entire propriety. But another count against her is that in the sample which you sent at least two eggs are on the sides of the cells, one of them being clear out of the mouth of the cell. If she keeps up too much of that sort of thing, she can hardly be forgiven.

3. I do not know. As I have already said, a good queen may sometimes do this for a time, but if she does much of it, and especially if she does not lay eggs in the bottom of the cell, I would fear she is a bad queen, without being able to say exactly why she does such things.

Setting Swarms—Queen Excluders, Etc.

1. On the front page of the American Bee Journal are the pictures of two men, one is that of Rev. Langstroth, the inventor of the movable-frame hive; who is the other?

2. On page 24 of the American Bee Journal of January, 1918, "Virginian" takes issue with Mr. Frank C. Pellett concerning the custom of some people making a noise when the bees swarm in order to get them to settle. Last season I had my bees under a big Chinaberry tree and a swarm settled on one of its branches about 10 feet from the ground. I shook them down 3 or 4 times after placing a hive under the spot where they were settled, but the bees always took wing and returned to the same branch. Then my wife took an old cow-bell and went to a nearby peach tree and rang it while I vehemently and continuously shook the branch, and the bees promptly settled on that peach tree, and were hived without further trouble. What is your opinion of this matter?

3. Is it possible for a virgin queen to go through a queen-excluder TEXAS.

ANSWERS.—1. It is Charles Dadant, the father of C. P. Dadant, one of the ablest bee-keepers of a former generation, who probably did more than any other man to popularize movable-comb hives in France, where he was better known than in America where he lived.

2. Are you sure it was a fair thing for you to butt in and not let the cowbell have a chance to do its work alone? Seriously, there is no certainty at all that the cowbell had anything to do with it,and at that moment it is just possible that the bees took it into their heads that they would change their location, cowbell or no cowbell.

3. Yes, such things have happened, either because the excluder was faulty or because the queen was abnormally small. But I suppose the same queen would go through just as well after becoming a laying queen. The abdomen of a laying queen is much larger than the abdomen of a virgin. It is not the abdomen, but the thorax that prevents the queen going through the excluder, and I think the thorax of a laying queen is no larger than it was while she was a virgin.

Feeding—Robbing

1. If bees have plenty of stores, would feeding stimulate brood-rearing?

2. Suggest a way of keeping combs of honey and empty combs free of moths. If they are placed in a vessel that a bee-moth can't enter, will I have them anyhow?

3. In my locality the honey-flow is scant for 60 days after swarming time. Should I feed my new syarms till conditions improve?

4. How can I stop robbing?

ANSWERS.—1. Generally not. With plenty of stores in the hive, so long as at least a little is coming from outside, brood-rearing will continue, and no amount of feeding you do will make any difference. If, however, an absolute dearth continues so long that the queen stops laying entirely, then feeding is of the utmost importance. In most places, however, that sort of thing never happens, and you can put it down as a pretty good rule that stimulative feeding and spreading brood are things best let alone.

2. If an empty comb or comb containing honey is entirely free from the bee-moth and its eggs or larvæ, then if you put it in a moth-tight place, it is safe. Indeed, such a comb is almost safe in any room in an ordinary dwelling without being moth-tight. Unfortunately, in nearly every case when a comb of honey or a section is taken from a hive, it contains at least the eggs of the bee-moth, and under favorable conditions those eggs will hatch. You will see that a comb containing eggs will not be helped by putting in a moth-tight place. Your recourse in such a case is to brimstone the larvæ or to use carbon disulfide, which last will destroy both larvæ and eggs.

3. The old rule was always to feed the swarm for a few days. I do not suppose it is really necessary, but at least it can do no harm, and if the bees cannot at the time get honey outside, it may do good.

4. Do not let it get started. In nearly every case of robbing the beekeeper is at fault, having done some fool thing to start the robbing, such as leaving bits of honey exposed. Various ways of stopping robbing have been used, one of the best being to pile hay or straw around the hive and keeping it thoroughly wet down with water. The robbers don't like to go through the wet stuff, and it does no harm to the bees of the colony.

Tin for Honey—Introducing Virgin

1. Is a tin tank good for extracted honey?

2. How long can I let honey stand in a tin tank without doing harm to the honey?

3. If I put all but one frame of brood in a hive-body above an excluder, leaving the other brood and the queen below, and fill the space in the lower body with frames of foundation and let them stand for seven days, and then set the upper body in a new place, could I safely introduce a virgin into this hive as soon as most of the old bees returned to their old stand? MINNESOTA.

ANSWERS.—1. Yes.

2. I don't know why it shouldn't stand all right for months if the surface of tin is perfect.

3. Yes; after the old bees have all returned to the old location almost any queen may be easily introduced. There might, however, be trouble with a virgin many days old. The easiest of all queens to introduce is a virgin less than a day old.

Swarms Leaving

About 6 o'clock one morning last week a swarm of my bees came out and went into a hive close by that was weak. About 3 o'clock the next afternoon I looked into the hive and found the bees had left. I didn't see them go and don't know where they went.

About 4 o'clock the next evening another swarm came out and alighted on the limb of a tree. I hived them. After staying in the hive a while they came out and went back into the hive from which they came first. The first was a small swarm, the second a very large one. What would you think caused them to cut such capers? ILLINOIS.

ANSWER.—Bees seem to take delight in doing unaccountable things, things that leave one guessing. Your first case is the more unusual of the two. It is not so very uncommon for a swarm to enter a hive already containing a colony, but why should the whole thing abscond? A virgin in the swarm helps a little as a guess, and possibly the hive was standing in a hot place, which, together with the excitement of the intrusion, made them swarm out.

The second case happens rather often, possibly because the queen has difficulty in going with the swarm, and possibly for some reason we don't know anything about.

Demaree Plan—Other Questions

1. I have 17 swarms so far. If I practice the Demaree or Allen plan of swarm prevention what will I do with so many bees after the honey season is over?

2. Should all queen-cells be cut out before the brood-frames are put into the upper story?

3. If after getting the swarm built up I should put comb-honey supers on, wouldn't the bees likely begin to swarm?

4. Do you believe in swarm prevention? I should think it better than having swarms emerge, as I should think that more honey will be produced than having the swarms leave.

5. A neighbor had a swarm emerge from his house. I hived it and the next morning it was out on a small tree about two feet high. I hived it again for him and a couple of days later I went over to his place and behold the swarm had left. After about 8 or 10 days a second one came out and I hived it. Next morning it was out, and so I hived it again. This time I put in a comb with young brood and it stayed. In about three days a third one came out and he gave it to me. I carried it home in a basket and put it into an old hive with four frames with full sheets of foun-

dation. The next day I went out to transfer them into a new hive, and they were not there. I can hardly account for that. The hive the neighbor gave me was a new 10-frame, complete with new frames and full sheets of foundation.

Do you think that was a swarm of a wild nature? IOWA.

ANSWERS.—1. Dont' worry about so many bees. You will have only the progeny of one queen in each hive, and the hive will easily hold them all.

2. Yes, and also 8 or 10 days later.

3. They might.

4. I believe in doing anything and everything to prevent swarming that will not lessen the crop of honey.

5. Those bees were probably no wilder than others, but having a virgin queen they were inclined to desert if everything wasn't entirely to their liking. Like enough they were too warm. It is always well to give extra ventilation to a newly hived swarm, especially if it has a virgin queen.

Catalpa

Is the catalpa bloom considered a honey-producer? KANSAS.

ANSWER.—I have never heard catalpa spoken of as an important honey-plant, and have never seen bees upon it, although I have had very little chance for observation.

Queen-Cells Not Destroyed

1. I have a hive of bees that I caught this year. They have most of their comb drawn. They had a queen, but she disappeared after laying a good many eggs. They now have several queen-cells started and several are hatched, but none have been destroyed. I always thought that the first queen to hatch destroyed all the rest.

2. The bees have most of the frames filled with honey or pollen, with some sealed brood. There are very few vacant cells where the queen can lay. Would this be likely to cause them to swarm? If so, what can I do to prevent it?

3. How much comb honey can I expect to get here in an average year? OHIO.

ANSWERS.—1. As a rule the first virgin that leaves her cell kills the others, unless prevented by the workers. If they decide it is best to send out a swarm they protect the cells from her.

2. It is not entirely clear just what the conditions were, but being crowded for room is an important factor in making bees swarm. You should allow abundant room in the supers *before* they have any crowded feeling.

3. That's a matter that varies greatly, depending on the season and the management. A beginner might feel well satisfied with 50 pounds to the colony.

Miscellaneous Questions

1. How much profit can be made out of one hive or colony of bees?
2. How many colonies can one man tend?
3. Which, in your estimation, is the best State for beekeeping?
4. What are assistants paid on apiaries, to learn?
5. Is there any future to the bee business, or is it overcrowded?
6. Will the price of honey drop down to 10 cents a pound, or how much will it drop?
7. What are the best books on the subject of beekeeping? IOWA.

ANSWERS.—1. That's a pretty broad question. An expert might run it up into the hundreds by having a colony of such good stock that he could rear queens from it and sell them at a good price. But if you mean how much can be get for the honey received from one colony, it might in rare cases reach $50 or more. But taking one year with another, the average beekeeper will be doing very well if he averages $5 per colony, and a beginner sufficiently expert at making blunders might make that amount about $5 less in any but a very good year.

2. In most cases probably not more than a hundred.

3. I don't know. The difference is likely so little that in most cases it would not pay a man to change from one State to another.

4. That's as it happens. In some cases the assistant gets his tuition for his labor, and from that it varies until he gets a fair wage for his time without reckoning his tuition.

5. So long as honey remains the best sweet known there is a future for the bee-business, and so long as tons of nectar are going to waste it can hardly be overcrowded.

6. It is hard to foretell the future. I wouldn't attempt to be a prophet, but my guess would be that while honey, like everything else, will come down in price, it will never again fall to the low level of past years.

7. Those published by the publishers of this journal are good. Among the others may be named Root's ABC and XYZ, Dr. E. F. Phillips' Beekeeping, Frank C. Pellett's Productive Beekeeping, and after you have these committed to memory you may be interested in reading Dr. Miller's Fifty Years Among the Bees.

Caging Queens

Do you believe a queen is injured by being caged ten days during the clover flow? Please fully explain your reasons for your opinion. OHIO.

ANSWER.—No, I don't really believe it does a queen any harm to be caged ten days in a hive during the clover flow, unless the cage be so small that she is allowed no room for exercise. If you press me for my reasons for thinking so I might answer with Falstaff, "Give you a reason for compulsion! If reasons were as plentiful as blackberries, I would give no man a reason on compulsion, I." Or, I might say I have no particular reason for it, and turn upon you with the question, "What reason have you for thinking it does hurt her?" It might be thought that there is a sort of violence in a sudden cessation of heavy laying. But she can keep on laying if she wants to, even if she doesn't deposit the eggs in cells. And ought there not to be some gain to the queen from a ten days' rest? I have had queens thus caged by the hundred, and never knew any harm to come from it. That's negative testimony, to be sure, and I'm ready to change my mind as soon as given a good reason to do so.

Bees Disappearing

I bought two colonies of bees one year, and the next spring I had four colonies; this was last year. Last fall I had four new colonies and seven supers of honey. I wintered the eight colonies in the attic of a dwelling-house and they appeared to be in good shape until lately, when three colonies disappeared. Nothing but the empty comb left in the hive, and another hive has just a few bees left. There seems to be fewer bees each day. One hive had the cover filled with honey and before I got around to put on a super the honey next to the brood-racks had young bees in it, but the rest was nice and clear. The only change I made from last summer is, I put concrete blocks under the hives. Each colony swarmed once last year, and I then kept the queen-cells cut out.

What is the reason my bees are disappearing? MINNESOTA.

ANSWER.—You say you let each colony swarm once last year, *and then kept the queen-cells cut out.* When a swarm issued from any colony there were left in the hive a number of queen-cells from one of which a future queen was to emerge. These cells you cut out. Then the bees started other cells from young brood in the hive. But these cells you kept cut out, and there being no more young brood in the hive the bees were left hopelessly queenless. So the disappearance of the bees was from death through old age, there being no young bees in the hive to take the place of those dying off. Next time, instead of keeping all queen-cells cut out, leave one from which a queen may be reared.

Transferring

I have 10 colonies of bees in standard 10-frame hives, which I desire to transfer to Jumbo hives. How can this be done? When is the best season to do this? ALABAMA.

ANSWER.—The transferring should be a comparatively easy thing, seeing that your old frames are the same length as the Jumbo frames. Follow the plan laid down in your book for transferring, cutting out the comb from the old frame and putting it in the lower part of the new frame. That will leave a vacancy of two inches or so at the upper part, and three or four of these vacancies can be filled by cutting up one of the combs into strips of the proper size. The best time to do this is when honey is coming in freely in the season, say in fruit-bloom.

Exhibit by British Columbia Department of Agriculture at Flower Show held at Nelson, B. C., during the Western Canada Irrigation Association's Convention, in 1918. Produced and staged by W. J. Sheppard, Inspector of Apiaries for the Kootenays.

NEWS

Another Association Formed.

A new beekeepers' organization has been formed at Torrington, Wyoming. A. B. Robertson is President, Mr. Pottello Vice President and Harry Eaton Secretary.

New York County Meeting

The Monroe County Beekeepers' Society of New York State will meet August 9 at 10 a. m. at the home apiary of its President, Louis F. Wahl, Scottsville Road, Lincoln Park, N. Y. Everybody welcome, and a general good time for the ladies is arranged. F. M. PILLSBURY,
Secretary.

East Tennessee Beekeepers

The East Tennessee Beekeepers' Association was organized Thursday, June 28, at the Chamber of Commerce, Knoxville, when 250 representative men and women of the State gathered at the call of State Entomologist G. M. Bentley. Mr. Bentley was chosen President and Mrs. J. B. Young, Knoxville, Secretary and Treasurer. The President was empowered to name a Vice President in each of the 34 East Tennessee counties to co-operate in organization, legislation and fair exhibits. Nearly every member present at the organization meeting joined the association. Among those on the program were: G. M. Bentley, Mrs. J. B. Young, Knoxville; W. B. Green, Martel; Curd Walker, Jellicoe; Richard Crane, U. S. Department of Agriculture; O. M. Watson, Knoxville, and Kennith Hawkins, Watertown, Wis.

Beekeepers Meet at Ambler

The combined meeting of the Philadelphia Beekeepers' Association and the Pennsylvania State Beekeepers' Association held at the School of Horticulture for Women, near Ambler, on Saturday afternoon, June 14, was a big success from both a social and beekeepers' viewpoint. About 50 ladies and gentlemen interested in bees were present.

Millen to Ontario

Prof. F. Eric Millen has resigned his position as State Apiarist of Iowa to accept the position of Provincial Apiarist of Ontario. Mr. Millen has already entered upon his work at Guelph. He was very successful in his Iowa position and general regret is expressed among Iowa beekeepers that he has decided to leave that State. At last report the Iowa position had not yet been filled.

Texas Experimentalist

A letter from Prof. Paddock, the State Entomologist of Texas, conveys the information that Mr. H. B. Parks, who was Extension Apiculturist at the Agricultural College, has accepted the position of experimentalist in bee culture with the Experiment Station. Mention has already been made of the fact that the Legislature recently made provision for experimental work in beekeeping on an extended scale. Mr. Parks should be a good man for this work, as he has had wide opportunities for observation and is a close observer.

Instruction for Disabled Soldiers

The Government is making liberal provision for our disabled soldiers. Any who are interested in beekeeping will be provided with instruction at government expense at any of the following agricultural colleges:

University of Minnesota, St. Paul.
College of Agriculture, Ames, Iowa.
Agricultural College, Storrs, Conn.
College of Agriculture, New Brunswick, N. J.
Agricultural College, East Lansing, Mich.
Agricultural College, College Station, Texas.
Agricultural College, Manhattan, Kans.

The soldier and his dependents will be provided for by the Government while he is taking training, thus relieving him of any anxiety on this point. Plans are also under way for some special intensive courses of practical beekeeping instruction for disabled soldiers in addition to the regular courses offered at the agricultural colleges. Those interested may learn more concerning these opportunities by addressing the Federal Board for Vocational Education at Washington, D. C.

Beekeepers' Chautauqua

The program of the Wisconsin Beekeepers' Chautauqua, mention of which has already appeared in our columns, is at hand. This is a novel summer camp for beekeepers, to be held on the shore of Lake Mendota, at the College of Agriculture, at Madison, from August 18 to 23. Doctor Phillips and Mr. Demuth, from the U. S. Department of Agriculture, are announced to be present, in addition to prominent Wisconsin men.

Beekeepers' Picnic in North Idaho

Mr. and Mrs. Arthur Sires, who operate a number of bee-yards in Bonner County, Idaho, under the firm name of Sires & Sires, very cordially invited all the beekeepers in that region to attend a picnic and field meet on June 26, at their home apiary, about 10 miles from Sandpoint, and on the high bluff shore of Lake Pend d'Oreille.

About 40 beekeepers, including friends and neighbors, attended the picnic. Mr. Virgil Sires and a beekeeper nephew from Yakima, Wash., were also present. The Sires brothers have been specialist beekeepers in the Yakima country for about a quarter of a century, and produced honey by the carload. Sires & Sires now have several hundred colonies in their six or seven apiaries surrounding Sandpoint.

Mr. E. L. Ludwick, Bonner County Agricultural Agent, after the bounteous dinner, introduced Prof. H. A. Scullen, the government specialist in beekeeping, who gave a very interesting and instructive address.

GEO. W. YORK.

CLASSIFIED DEPARTMENT.

Advertisements in this department will be inserted at 15 cents per line, with no discounts of any kind. Notices here cannot be less than two lines. If wanted in this department, you must say so when ordering.

BEES AND QUEENS

ITALIAN QUEENS AND NUCLEI—
Untested queens, $1; tested, $1.50; select tested, $2.50.
1-Frame Nucleus, $2.25; 2-frame, $4.00.
1-lb. package of bees, extra, $2.25; 2-lb. package, $4.00.
A trial order will convince you of their merits. H. A. McCarley, Mathis, Tex.

THE AMERICAN BEE JOURNAL is prepared to furnish printing for beekeepers. High quality, prompt service and satisfaction. Our shop is in charge of a man who specializes in printing for the honey producer. Send for our catalog of honey labels, stationery, etc.
American Bee Journal, Hamilton, Ill.

FOR SALE—Fine Italian queens, untested, $1 for one; $5.50 for six; tested, $2 for one; $9 for six; tested by return mail, untested ready June 1 to June 10.
R. B. Grout, Jamaica, Vt.

FOR SALE—Leather colored Italian queens, tested, June 1, $1.50; untested, $1.25; $13 a dozen. A. W. Yates,
15 Chapman St., Hartford, Conn.

ITALIAN QUEENS—Northern-bred, three-banded, highest grade, select, untested, guaranteed. Queen and drone mothers are chosen from colonies noted for honey production, hardiness, prolificness, gentleness and perfect markings. Price, one, $1; twelve, $11; fifty, $45. Send for circular.
J H. Haughey, Berrien Springs, Mich.

FOR SALE—Hardy Italian queens, 1, $1; 10, $8. W. G. Lauver, Middletown, Pa., R. 3.

FOR SALE—Goldens, untested, 1, $1.25; 6, $6.50; 12, $11.50. S. A. Tyler, Emden, Ill.

THREE-BANDED ITALIANS ONLY—Untested queens, 1, $1.25; 6, $6.50; 12, $11.50; 50, $40; 100, $75. H. G. Dunn,
The Willows, San Jose, Calif.

GOLDENS that are true to name. Untested queens, 1, $1.25; 6, $6.50; 12, $11.50; 50, $40; 100, $75. Garden City Apiaries,
San Jose, Calif.

FOR SALE—Bright Italian queens, $1 each; $10 per doz. Ready April 1. Safe arrival guaranteed.
T. J. Talley, R. 4, Greenville, Ala.

FOR SALE—3-band Italian queens ready June 1. Untested, each $1; twelve, $10; 100, $80. No disease here and satisfaction guaranteed. A. E. Crandall & Son,
Berlin, Conn.

LEATHER and all dark colored Italian queens, when we have them, mated, $1 each. These queens will include all that are not up to the standard in our goldens, but will be good utility stock. C. W Phelps & Son,
No. 3 Wilcox St. Binghamton, N. Y.

FOR SALE—3-band Italian queens from best honey-gathering strains obtainable. Untested queens, $1.25 each; 6, $6.50; 12, $11. Satisfaction guaranteed. W. T. Perdue,
Route No. 1, Fort Deposit, Ala.

OUR BRIGHT ITALIAN QUEENS will be ready for shipment after April 15. Untested, 75c each; half doz., $4.50, or $8 per doz. Select untested, 90c each; half doz., $5.50, or $10 per doz. Tested, $1.50 each. Safe arrival guaranteed.
Tillery Bros., R. 5, Box 1D, Georgiana, Ala.

FOR SALE—Pure 3-banded Italian queens, as good as you can buy with money, from June 1 to September 1.
J. F. Diemer, Liberty, Mo.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
1Atf 84 Cortland St., New York City.

SWARTS GOLDEN QUEENS produce golden bees of the highest quality; satisfaction guaranteed. Mated, $1, 6 for $5; tested, $2.
D L Swarts, Lancaster, O., Rt. 2.

PHELPS' GOLDEN ITALIAN QUEENS combine the qualities you desire. They are great honey gatherers, beautiful and gentle. Virgin, $1; mated, $2. C. W. Phelps & Son,
3 Wilcox St., Binghamton, N. Y.

FOR SALE—Three-banded Italian queens; untested queen $1, six, $5.50; twelve, $10. Tested queens $2 each.
Robert B. Spicer, Wharton, N. J.

EDSON APIARIES increased queen rearing facilities will insure the prompt delivery of A1 laying Italian queens, leather colored or golden. Prices reasonable Address
Edson Apiaries, West Butte, Cal.

FOR SALE—Italian queens; select just hatched, 50c; untested, $1. Especially safe introduction plan free. Order in advance.
James McKee, Riverside, Calif.

I. F. MILLER'S STRAIN Italian Queen Bees for sale. Northern bred, for business, from my best superior breeders; gentle, roll honey in, hardy, winter well, not inclined to swarm; leather color or 3-banded. Queens a specialty; 25 years' breeding experience. Safe arrival and satisfaction guaranteed. Untested, $1; 6, $5.50; 12, $10. Select untested, $1.25; 6, $6.75; 12, $12.
I. F. Miller, Brookville, Pa., R. R. No. 2.

FOR SALE—Golden queens second to none, for honey gathering and gentleness are unsurpassed; untested $2, tested $5 to $10.
E. V. Marston, Roxbury, Va.

FOR SALE—Queens, 3-banded Italians; selected untested, $2; selected tested, $3; safe arrival and satisfaction guaranteed.
Clinton Bradway, Monson, Mass.

FOR SALE—J. B Brockwell's golden queens, untested $12 per doz., $7 for 6, $1.50 each; 3-frame nuclei $8, with queen. Tested queens $3 each. J. B. Brockwell, Barnetts, Va.

FOR SALE—Golden Italian queens $1, 6 for $5; hybrids, 3 for $1.
J. F. Michael, Winchester, Ind.

ITALIAN QUEENS of "Windmere" for sale; untested $1, tested $2
Prof. W. A. Matheny,
Ohio University, Athens, O.

QUEENS, QUEENS—We are now up with orders; are mailing queens day after receipt of rush orders. No disease; satisfaction guaranteed. Best Italian untested queens 1 for $1, 12 for $11.50, 50 or more 90c each. I will care for your interests.
W. D. Archord, Pike Road, Ala.

FOR SALE—12 colonies bees in new 10-frame hives, wired combs, with 1 extracting super each, $7 each; 8 colonies bees in 8-frame hives, wired with 4 comb supers each, price $7 each.
Wm. Feier, Jr., Mason, Mich.

I AM PREPARED for shipping prize-winning queens. My queen was awarded first prize at State Beekeepers' Convention held in Little Rock May 31. Untested, $1; tested, $2.
H. P. Gannaway, R. 1, Box 243, Ft. Smith, Ark.

DON'T send to me for queens. If you want my stock send to the Penn Co., Penn, Miss. I furnish to them, and to no one else, best breeding queens.
C. C. Miller, Marengo, Ill.

FOR SALE—20 colonies bees, mostly Italians.
A. C. Gould, Weston, West Va., Route 4.

WARRANTED QUEENS—Dr. Miller's strain, $1 each, $10 per doz.; tested $1.50 each, $15 per doz. Safe arrival and satisfaction guaranteed. Geo. A. Hummer & Sons.,
Prairie Point, Miss.

ITALIAN BEES for sale in 10-frame factory-made dovetailed hives, at $9 per colony. Pound packages of bees at $2.25 per pound, 2 pounds $3.75; untested queens $1.25 each. Add price of queen to bees in pound packages. No disease; inspector's label; satisfaction guaranteed.
J. F. Coyle, Penfield, Ill.

WANTED—6 Caucasian queens.
J. J. H., Box 5, Brownville, Fla.

"SHE SUITS ME" Italian queens, $1.15 each, from May 15 to October 15; 10 or more, $1 each. Allen Latham, Norwichtown, Conn.

I CAN FILL ORDERS by return mail for my choice stock of 3-band Italian queens. See prices elsewhere in Journal.
A. B. Marchant, Doctortown, Ga.

FOR SALE—One hundred stands of bees in 8 and 10-frame hives, wired frames; bees healthy. Write for prices and particulars.
Duane Shaw, Palestine, Ill.

REQUEEN NOW with Simmons' queens; prize-winning strains of goldens and 3-bands. Till September 1; none later. Order now; one, $1.50; 6, $7.50. Fairmount Apiary,
Allen R. Simmons, Claverack, N. Y.

FOR SALE—Baby swarms, three frames and queen, $5. J. A. Dougherty,
Box 66, California, Hamilton Co., Ohio.

FOR SALE—Italian bees and queens (the kind that fill from 2 to 6 supers). Bees, $12 a colony; queens, $2 each, 6 for $11. Queens go by mail, bees by express. Order direct from this ad. Miss Lulu Goodwin,
Mankato, Mich.

FINEST THREE-BANDED Italian queens for $1.25, 6 for $7.
J. W. Romberg Apiarist,
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FOR SALE—Pure 3-banded queens, reared by the Doolittle method. Untested, 75c each, 6 for $4.25, 12 for $8. Tested $1 each, 6 for $5.75, 12 for $11. Breeders $4.
H. N. Boley, Hillsboro, Ia.

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FOR SALE—Finest Michigan raspberry, basswood and clover comb and extracted honey. Unexcelled for quality and flavor. Write for prices. W. A. Latshaw Co.,
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WANTED—Extracted white clover honey; state how packed, price; send sample.
L. P. Zimmerman,
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WANTED—Clover honey, comb and extracted. Buckwheat considered if price is right. State lowest cash price at your station. Sample will be requested if price suits.
The Forest Honey Co.,
2323 S. Woodstock St., Philadelphia, Pa.

FOR SALE—15,000 pounds of fine clover and basswood honey. The best offer takes it if satisfactory. Chester E. Keister, Clarno, Wis.

FOR SALE—New crop clover extracted honey, two 60-pound cans to case, 25c per pound.
H. G. Quirin, Bellevue, Ohio.

WE WANT every subscriber of the American Bee Journal to become a subscriber of the Domestic Beekeeper. Listen: A $5(or more) order of beekeepers' supplies at catalog price bought through the Domestic Beekeeper, Northstar, Mich., and a dollar extra for a year's subscription to the Domestic Beekeeper, will entitle you to a dollar rebate, leaving your subscription to the Domestic Beekeeper absolutely free. Could one ask more? This offer will give one an idea of what the Domestic Beekeeper is doing for its subscribers in the way of buying their supplies.

WANTED—Light extracted honey, clover preferred; can use a ton. State price and particulars.
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WANTED—Comb, extracted honey and beeswax. R. A. Burnett & Co.,
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WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering. Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

WANTED—Extracted honey, all kinds and grades, for export purposes. Any quantity. Please send samples and quotations.
M. Betancourt, 59 Pearl St., New York City.

FOR SALE

FOR SALE—Clover and buckwheat honey in any style container (glass or tin). Let us quote you. The Deroy Taylor Co.,
Newark, N. Y.

FOR SALE—Cedar or pine dove-tailed hives; also full line of supplies, including Dadant's foundation. Write for catalog.
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FOR SALE—Silver Spangled Hamburg eggs and fine, rare old Paganini violin for sale.
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FOR SALE—Photos of L. L. Langstroth, inventor of movable-frame hives, size 7x9; price, $1. American Bee Journal,
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FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled.
Superior Honey Co., Ogden, Utah.

FOR SALE—34 or 80 acres, 25 stands of bees, buildings, clearing, excellent location for beeman, near nice lake; will sell cheap.
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FOR SALE—8 acres land, 300 colonies bees; land in high state of cultivation, growing second crop now; price per acre, $200. Apiary in three yards; production highest average in 10 years, 96 lbs. extracted honey, lowest 23 lbs, per colony. S. Mason, Hatch, N. M.

FOR SALE—1 large hand-power Cowan honey extractor, 1 boiler wax press, uncapping can and honey press combined, 1 Barnes combined circular and scroll saw, hand and foot power. All in first-class condition.
S. J. McDonald, Manning, Iowa.

FOR SALE—Nearly new 25-20 cal. repeating rifle, Marlin model 94; will trade for extractor. Carl Franke, Mauston, Wis.

FOR SALE—Cowan rapid reversible extractor, practically new, $23. L. Clark, Winona, Minn

FOR SALE—100 colonies of Italian bees; several strains, with full equipment for extracted and comb honey. No disease. Seven State certificates. Will sell everything at catalog prices of equipment, bees and honey thrown in. A bargain for somebody with the cash. Moving away, reason for selling.
E. A. Leffingwell, Allen, Mich.

I CAN FILL ORDERS by return mail for my choice stock of 3-band Italian queens. See prices elsewhere in Journal.
A. B. Marchant, Doctortown, Ga.

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FOR SALE—1 Root 4-frame automatic reversible extractor, good as new, $46.

Fifty-four pounds of medium brood at Dadant's, Hamilton, Ill., at 70c; order this lot from them.

One Cowan 2-frame hand reversible extractor, first-class condition, $18.

One Root German wax press and uncapping can with 20-inch galvanized iron top for uncapping; suitable for yard of 25 to 100 colonies, $18.

One 50-pound box Dadant's and 2 25-pound boxes Root medium brood foundation, at 70c.

Prices f. o. b. Watertown, Minn. Will trade for or buy an 8-frame friction gear power extractor and honey pump. C. E. Dustman, 315 Center St., Des Moines, Ia.

FOR SALE OR TRADE—Model 10 Royal standard typewriter, visible; like new; cash $50. Cost $100. E. A. Harris, Albany, Ala.

FOR SALE—$4,800, 183 acres two miles from Pleasant Lake, N. Dak.; 100 acres of it in wheat. The crop goes with the farm, if sold promptly. Near the main line of the G. N. R. R. Address, "R," American Bee Journal Office, Hamilton, Ill.

WANTED

WANTED—Your old combs, cappings or slumgum to render into beeswax by our high steam pressure wax presses. Dadant & Sons, Hamilton, Ill.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices. Superior Honey Co., Ogden, Utah.

WANTED—Second-hand 10-inch foundation machine, 5 cells to the inch; must be in good condition. Write giving full particulars as to date bought, size rolls, general condition and price (lowest) to Isidoro A Baldrich, P. O. Box 25, Cayey, P. R. W. I.

WANTED—Small size honey tank or extractor can. H. Leffel, Lakewood, Wis.

WANTED—I have a fine location in California and want a man to associate himself with me in the beekeeping business. I have the stock of bees and equipment here in Arizona; wish to ship all to a certain point in California this fall; have an attractive proposition to offer the right man that can invest in half interest in what I have. Tell your story in first letter. J. B, Douglas, Box 1085, Tucson, Ariz.

WANTED—Beeswax, old combs, cappings or slum-gum. We have just completed a very fine wax press and wax rendering department which will extract every bit of wax from your slumgum. No matter where you live, it will pay you to send us your wax refuse to render into refined wax or exchanged for Miller's California foundation. A trial will convince you. Send us a trial lot by freight today. Miller Box Manufacturing Co., 201 N. Ave. 18, Los Angeles, Calif.

WANTED—To buy, light extracted clover and linden honey. Address Emil Strudel, 1461 Richard St., Milwaukee, Wis.

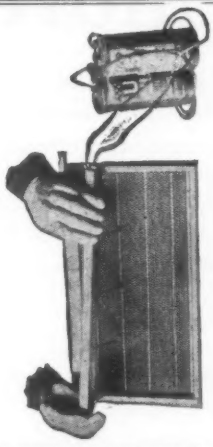
MISCELLANEOUS

E. D. TOWNSEND, the present owner of the Domestic Beekeeper, bought beekeepers' supplies for the National Beekeepers' Association for several years. He is now buying for the subscribers of the Domestic Beekeeper at the same low manufacturers' price. Listen now what he has got up his sleeve: Any American Bee Journal subscriber buying $5 worth of supplies through the Domestic Beekeeper at catalog price, and sending along an extra dollar to pay for a year's subscription to the Domestic Beekeeper, will get in return a rebate check of $1, leaving the year's subscription to the Domestic Beekeeper absolutely free to you. Of course, if your order for supplies is larger than $5 you will have a correspondingly larger rebate check on your order. One of our subscribers got a rebate check on his order of supplies last month, March, of $40. It was just like getting money from home to him, as he sent us the same money he would have had to pay if he had bought through the regular dealer in beekeeper supplies. More and more, close buyers of beekeepers' supplies are investigating the buying facilities of the Domestic Beekeeper. A word to the wise should be sufficient to cause you to send your next order for beekeeper supplies to the Domestic Beekeeper, Northstar, Michigan.

SUPPLIES

FOR SALE—100 cases two 5-gallon cans in second-hand cases. The cans are brand new and the cases are carefully renailed and good as new except for looks. Price per case, $1.25. Dadant & Sons, Hamilton, Ill.

SPECIAL—Best No. 1 Sections, per crate of 500, $3.50; other goods in proportion. Price list free. H. S. Duby & Son. St. Anne, Ill.



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Complete directions for operating are furnished with each device.

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Queens by Return Mail

Bred from the best three-band Italian stock. Nothing better. Single, $1.25, six for $5.50, twelve for $10.00. Breeders $3.50.

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$1.75 postpaid

R. B. CALKINS
5800 Hearn St., Oakland, Cal.

Don't stop advertising.
because honey is high. Make it more in demand, so the price will stay where it is. Little stickers on your letters, papers, etc., will help. Printed as below in bright red.

Price of 1,000 gummed, 35c.

American Bee Journal Hamilton, Illinois

ATTRACTIVE CLOTHES

Do not make the man, but they add greatly to his appearance.

Just so with your honey. It must have quality, but should have a neat package and an attractive lebel.

We can furnish the label. In many sizes and shapes suitable to fit any container.

Write for our new price list of honey labels and stationery.

American Bee Journal, Hamilton, Ills.

Moneycomb will make your Beekeeping more Profitable

MONEYCOMB marks a progress as distinct as the electric light compared to the candle; or the steamship to the sailing vessel.

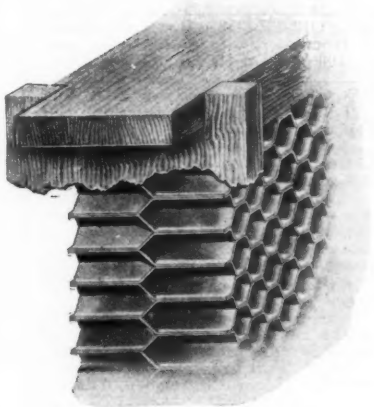
Heretofore Honey Producers have had to combat innumerable difficulties which reduced their possible profits.

MONEYCOMB, the Aluminum Honeycomb, has eliminated these troubles. The claims made for MONEYCOMB are based on facts gathered from the experience of hundreds of Beekeepers in almost every section of the country who are using MONEYCOMBS.

MONEYCOMB is not a foundation. It is a complete comb construction placed in a standard Langstroth frame, thinly coated with beeswax, and ready for immediate use.

Beekeepers are fighting hard against the ever-increasing destruction of their bees through the ravages of foul brood and other diseases.

Obtain MONEYCOMB and transfer your bees to them from your wax combs. A strong, healthy hive can be produced in from 25 to 35 days.



A cross section of brood and honey Aluminum Comb showing the size and shape of its cells.

EIGHT EXCLUSIVE MONEYCOMB ADVANTAGES

1 Substantial increase in the production of honey due to time saved in the drawing out of combs. MONEYCOMB is a complete comb.

2 Absolute control of European and American foul brood and other diseases. MONEYCOMB can be sterilized and used over and over again.

3 Positive prevention of loss from melting in hot weather—MONEYCOMB is constructed of aluminum, (not wax) therefore it entirely eliminates loss of bees and honey through melting and sagging of combs in hot weather.

4 Extraction of heavy honey easily accomplished with MONEYCOMB; this is practically impossible with wax combs.

5 MONEYCOMB permits entire control of the production of drone bees.

6 MONEYCOMB being made of aluminum, eliminates loss of combs by wax moths and redents.

7 MONEYCOMB will last a life time; you can use it over and over again.

8 MONEYCOMB will save you more than its cost on your first honey crop because of the increased production, time saved, control of disease, and insurance against losses. Thereafter, because you use it over and over again, MONEYCOMB will pay you big, profitable dividends.

Weigh the above advantages — consider them point by point—you will then readily understand why MONEYCOMB is revolutionizing the beekeeping industry. MONEYCOMB is indispensable to every beekeeper because of its obvious merits. What other device used by beekeepers can excel or even equal MONEYCOMB?

JUST TWO OF MANY LETTERS

June 16, 1919 Orland, California

I have been trying the metal combs you sent me last spring. I find my bees putting honey and brood in the cells. So with me it is proving a success. I am advising my friends over this country to make a start with them.

With best wish for your success, I am,

Yours truly,
W. A. SAYLER

Bee Inspector for Glen County.

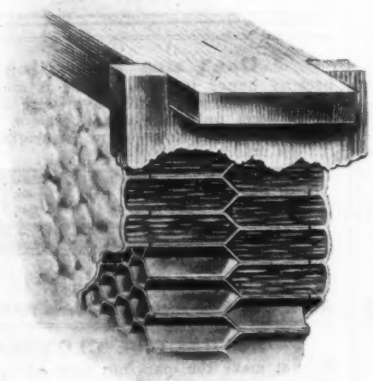
Spadra, California

I am pleased to give you a report upon the eminent satisfaction which the aluminum honeycombs (MONEYCOMBS) purchased from you are giving. These combs were intermixed with some wax combs which I have, and upon examination I found the aluminum combs were better filled with honey and brood than the wax combs.

I consider your aluminum comb (MONEYCOMB) the greatest invention which has been offered to the beekeeping world. I have been a beekeeper for the past forty years and consider I am well qualified to express an opinion concerning your comb after having given it such a thorough and practical test.

Kindly enter my order and ship me at once 100 combs

W. G. BARTLETT.



The Aluminum Honeycomb is uncapped the same as a wax comb. Note in the above cut how bees build on a wax capping which makes it easily uncapped with an uncapping knife.

How You Can Find out for Yourself the Facts About Moneycomb

MONEYCOMB sold on a guarantee of "satisfaction to you, or your purchase price refunded." That proves our confidence in our product. We know what it will do, of the satisfaction you can obtain through its use. We know that if you will try them out that you are bound to join the ever-increasing mass of MONEYCOMB boosters.

PRICE OF MONEYCOMB: 10 combs, (standard Langstroth frames) for $6 f. o. b. factory, Uplands, California.

Remember— You never invested an amount as small as that required for MONEYCOMB which produces greater satisfaction or profit.

Note— Get your order in at once to insure immediate delivery to you.

Aluminum Honeycomb Company

Central Building, 6th at Main Sts.

LOS ANGELES, CAL.

Crop and Market Report

Compiled by M. G. Dadant

THE CROP COMPARED TO LAST YEAR

In Massachusetts and the New England States, the crop is equal to last year, if not better. In New York it is probably 75 per cent of what it was last season, and reports, in some cases, state it will be about up to 1918.

In the States comprising Pennsylvania, Ohio, Indiana, and Illinois, the crop has been below normal, owing to the drought, although some localities have been favored with rain and will have a better crop than last year.

In the whole Southeast, the crop has been fairly good. Alabama claims about two-thirds of a crop, while Georgia and Florida will probably be normal. South Carolina is above normal.

Louisiana will have only a fair crop, but Texas has exceedingly flattering reports. In Texas the reports indicate that the crop will be from 200 to 300 per cent above last year, and reliable reporters state that it is above the normal crop covering a period of 10 or 15 years. Kentucky claims a little better crop than last year, while Missouri will be at least as good as 1918, as there was no crop in Missouri last year. Kansas is hardly up to 1918.

In Iowa the reports are very much varied in different localities. Eastern Iowa, as a general rule, will have very little crop, but western Iowa will probably range above last season. Reports indicate it will be 25 per cent better.

Michigan will have from one-third to three-fourths of last year's crop, which will be a little less than normal. Wisconsin claims a half crop, after a failure last year.

Minnesota is about half of normal and nearly up to last year.

Unfortunately, the crop in the inter-mountain States seems to be short. Arizona reports would indicate about a fourth of a crop, and New Mexico reports it will have less than in 1918. The majority of reports from Colorado indicate about half a crop. Wyoming is good, but not as good as 1918, and Montana is below last year. So is Idaho.

The same is true of the Pacific Coast States. California reports, as a general rule, from nothing to 75 per cent of last year, with a majority of the reporters claiming about 50 per cent of the 1918 crop. One lone reporter states he will get twice as much as last season.

Summing the matter up, the crop would fall short of last year, although the increased number of bees may increase the total somewhat. We await, with impatience, the data gathered by the Department of Agriculture as to just what percentage of crop there is this year. This, of course, is very slow in coming out, and may be three weeks to a month late.

CROP PROSPECTS

In the New England States the prospects for the balance of the year are above normal, while in New York they are probably normal. Ohio seems to have fair prospects, as do the other Central States, although there is not much fall crop harvested here. The Southeast will have very little during the fall, although there are minor flows. In Texas the prospects for a fall crop are good. There is an exception, however, in mesquite, which will be less than the average this year.

Apiaries located along the rivers, the Mississippi and Missouri especially, claim to have very good prospects for a fall flow. In western Iowa the same is true. The prospects from now on seem to be fine.

In the intermountain States the crop is not nearly all harvested, but the prospects appear to be about 50 per cent.

In California the prospects are mostly poor, although a few localities claim there will be a fair crop. All in all, we do not believe the honey gathered from now on will have any great influence on the market. The harvest during the last two months of summer is not very large when bulked in proportion to that of June and July.

PRICES OFFERED

Very few reported having offers on honey. One large Alabama producer was offered 13½ cents for tupelo and 15 cents for sweet clover honey, which offers he refused. Many Texas beekeepers have been offered from 11 to 15 cents for their extracted honey in two 60-pound cans. These, however, in practically every instance, were refused.

One party in Iowa was offered 15 cents, another in Idaho sold his comb honey for $6 per case, and several reporters in California had been offered and refused 17 cents for orange and 16 cents for white sweet clover. The situation as to offers has not changed very much from our last report. The big buyers seem to be holding off to see just where the market will settle, thinking possibly prices will drop later on.

PRICES EXPECTED

It is very pleasing to note that beekeepers are a unit in thinking they should get a good price for their honey. Only one or two beekeepers state they will be satisfied with the price of 13 to 15 cents for extracted and $5 per case for comb. Practically all the others desire in the neighborhood of 16 cents for amber and 18 to 20 cents for white extracted honey, with a price ranging from $6 to $7 for comb.

The California Co-operative Association raised their prices over previous quotations and are now asking 18½ cents for orange and 16½ cents for white sweet clover honey, f. o. b. coast. The Texas Association is expecting to get for its members in the neighborhood of 16½ to 17 cents for light amber extracted, and proportionately more for bulk comb.

It is interesting to note that reporters, as a rule, ask more per pound for their honey than is being quoted on the market by the different Co-operative Associations. This shows a tendency favorable to holding this honey off the market until the association price is accepted as the standard.

The Texas Association has sent out a bulletin to its members urging them not to sell at a reduced figure. Evidently there are plenty of buyers at a low figure, if the beekeepers are willing to accept. The Texas Association has made arrangements, also, for storage of their honey. Beekeepers may get 60 per cent of the value of their honey as soon as it is placed in a bonded warehouse. In this manner the association executive can hold the honey until they get the proper prices. A similar plan, no doubt, is being carried out by the California and Colorado Associations.

Threre is not much doubt that the formation of the many county associations throughout the whole United States has had a gratifying influence in holding up prices. The beekeepers have found the benefits of association and will apply them to marketing as well as to purchasing supplies and handling their colonies.

WHAT WILL PRICES BE?

It is a very difficult matter to make any guess as to where prices will settle. There are some important items which will have a bearing. The beekeepers seem to be working as a unit towards prices almost as good as last year's, and this they should have in order to compensate them for the high prices of all supplies, tin containers, etc.

Another thing which will help hold up the price is that the well-posted authorities state there is a shortage in the sugar supply for the season of from one to two million pounds.

The export of honey also is going better now, and more and more is being shipped out.

Notwithstanding all this, the demand for honey is not excessive. It is, of course, a little early, and we look for requests for prices to come in at a good rate as soon as cooler weather arrives.

We have received one report of request for prices on two carloads of white honey for December delivery. This came from a former wholesale liquor firm, who had evidently changed to the manufacture of sweets of some kind. It has further been reported that a large Missouri brewery is turning its entire equipment toward the making of candy. No doubt the output of soft drinks, sweets, etc., will be very much enlarged through the enforcement of the anti-liquor law. How much effect this will have upon honey is yet to be seen.

TENNESSEE-BRED QUEENS

Forty-Seven Years' Experience in Queen-Rearing

Breed Three-Band Italians Only

	Nov. 1 to June 1			*June 1 to July 1*			*July 1 to Nov. 1*		
	1	6	12	1	6	12	1	6	12
Untested	$2.00	$ 8.50	$15.00	$1.50	$ 7.50	$13.50	$1.25	$ 6.50	$11.50
Select Untested	2.25	9.50	18.00	1.75	9.00	16.00	1.50	7.50	13.50
Tested	3.00	16.50	30.00	2.50	13.00	22.00	2.00	10.50	18.50
Select Tested	3.50	19.50	35.00	3.00	16.50	30.00	2.75	15.00	27.00

Capacity of yard, 5,000 queens a year.
Select queen, tested for breeding, $5.
The very best queen, tested for breeding, $10.

Queens for export will be carefully packed in long distance cages, but safe arrival is not guaranteed. I sell no nuclei, or bees by the pound.

JOHN M. DAVIS, Spring Hill, Tenn.

EXPERIENCE COUNTS

An experienced beekeeper in Iowa writes:

"I must say it is a pleasure to use Lewis Beeware. Have used some that was cheaper, but the difference in quality vastly more than compensates for the difference in price."

A word to the wise—USE LEWIS BEEWARE. Write today. Dept. B

WESTERN HONEY PRODUCERS
1929-1931 FOURTH STREET
SIOUX CITY, IOWA

BEE SUPPLIES

We carry a complete stock of supplies at all times, and can make prompt shipments Our prices will interest you.

A trial order will convince you that our prices and goods are right.

Send Us Your Inquiries

A. H. RUSCH & SON CO.
REEDSVILLE, WIS.

BEES

We furnish full colonies of Italian bees in double-walled hives, single-walled hives and shipping boxes. Three-frame nucleus colonies and bees by the pound. Tested Italian queens, $2; untested, $1.50. Price list free

I. J. STRINGHAM, Glen Cove, N. Y.
NASSAU, CO.

Write for Price List and Booklet descriptive of

HIGH-GRADE
Italian Queens

JAY SMITH
Route 3
Vincennes, Ind.

Archdekin's Fine Italian Queens and Pound Packages

Untested queens, 75c each, 6 for $4.25; doz., $8. Select tested, $1.25. Safe arrival of queens guaranteed.

Package bees, without queens, $1.75 per lb. Packages, with queen, 1 lb. and queen, $2.50; 2-lb. and queen, $3.75; 3-lb. and queen, $4.75.

My package is best and lightest in use. Saves bees and express. In case of loss in transit, I will replace loss or recover from express company upon proper presentation of loss by customer. I fully protect my customers from loss.

J. F. ARCHDEKIN,
Big Bend, La.

PORTER BEE ESCAPE SAVES HONEY TIME MONEY

For sale by all dealers.
If no dealer, write factory
R. & E. C. PORTER, MFRS.
Lewistown, Illinois, U. S. A.

(Please mention Am. Bee Journal when writing)

QUINN'S QUEENS OF QUALITY

Have no superiors—"There's a reason." Are Mendelian bred, good qualities accentuated. Gray Carniolans, Gray Caucasians, most gentle of all, prolific, hardy, vigorous, disease resistant, white comb builders—they deliver the goods.

ITALIANS, 3-banded, line bred, pedigreed; need no boosting; they speak for themselves

CHAS. W. QUINN Sabot, Va.

Established 1885

We are still furnishing beehives made of white pine; they will last. A. I. Root Co.'s make of bee supplies kept in stock. Send for catalog giving full particulars; free for the asking. Beeswax in exchange for supplies, or cash.

JOHN NEBEL & SON SUPPLY CO.
High Hill, Montg. Co., Mo.

In making up rush orders remember we are able to make immediate deliveries by Parcel Post and Express of the following

Glass Honey Containers.
Friction Top Pails, 3, 5, and 10 pound sizes and 5 gal. cans.
All lines of supplies you are likely to need in a hurry.
Comb and Extracted Honey supers, with and without inside fixtures.
One and two story Lewis Beehives, in flat, nailed and painted.
Most sizes of Root's Extractors.
Bingham Smokers and Honey Knives (including steam heated.)
Lewis Sections all standard sizes.
Wire Nails, Staples and etc.
Wire, Nails, Staples, etc.
All lines of supplies you are likely to need in a hurry.

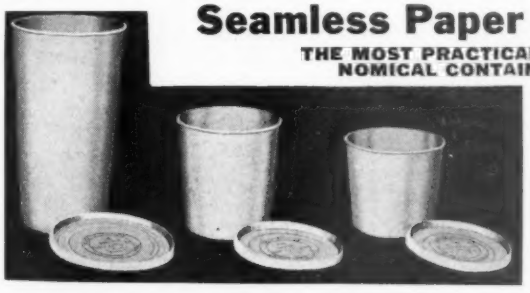
Need any shipping cases? We got lots of them. Thank you. Now may we serve you?

THE DEROY TAYLOR CO., Newark, Wayne Co., New York

If you read this before the first of **August Remember the** State Field Meeting and be with us.

Seamless Paper Containers

THE MOST PRACTICAL AND ECONOMICAL CONTAINER FOR



Honey

Superior to any other single service container manufactured

Write for particulars and prices

THE SANITARY PAPER BOTTLE CO. Sandusky, Ohio 415 Water St.

Golden Italian Queens

Rustburg, Va., R. No. 3, March 18, 1918.

Mr. Ben G. Davis:

Dear Sir—Please find enclosed $5, for which please send me the very best Golden Queen you can for the money. If you can't ship her at once, please notify me. I ordered one from you 3 years ago last fall that was the best I ever saw. Her bees stored 320 pounds of comb honey the first year. I have several of her daughters that are fine.

Hoping to get a good one again, I am yours truly,

J. W. LAWRENCE.

PRICES OF QUEENS

	Nov. 1st to June 1st			June 1st to July 1st			July 1st to Nov. 1st		
	1	6	12	1	6	12	1	6	12
Untested	$2 00	$8 50	$15 00	$1 50	$7 50	$13 50	$1 25	$6 50	$11 50
Select Untested	2 25	9 50	18 00	1 75	9 00	16 00	1 50	7 50	13 50
Tested	3 00	16 50	30 00	2 50	12 00	22 00	2 00	10 50	18 50
Select Tested	3 50	19 50	35 00	3 00	16 50	30 00	2 75	15 00	27 00

Safe arrival, purity of mating and satisfaction guaranteed

No Nuclei or Bees by Pound

Queens for export will be carefully packed in long distance cages, but safe delivery not guaranteed.

BEN G. DAVIS : : Spring Hill, Tenn.

QUEENS

Quirin's Improved Superior Italian Bees and Queens. They are Northern Bred and Hardy. 25 years a Queen-breeder

PRICES	Before July 1st			After July 1st		
	1	6	12	1	6	12
Select unte'ed	$1.50	$ 8.00	$14.00	$1.00	$ 5.50	$10
Tested	2.00	10.00	18.00	1.50	8.00	14
Select tested	2.50	14.00	25.00	2.00	10.00	18

BREEDERS—The cream from our entire stock of outyards, $5 each. Usually we can send all queens promptly after June 10th.

Breeders, select tested and tested queens can be sent out as early as weather will permit.

Send for testimonials. Orders booked now.

Reference—any large supply dealer or any bank having Dun's reference book.

H. G. QUIRIN, Bellevue, O.

BEE SUPPLIES

Let Us Figure With You

Get our discounts before buying Largest stock in South West.

C. C. CLEMONS BEE SUPPLY COMPANY

142 Grand Ave., Kansas City, Mo.

A BOOK FOR BEGINNERS

"First Lessons in Beekeeping," written by the editor of this magazine, is intended primarily for the use of beginners in beekeeping. You should have it. Price, postpaid, $1, or clubbed with the American Bee Journal, one year for $1.75.

American Bee Journal, Hamilton, Ill.

HONEY **WANTED** **HONEY**

¶ Write us what you have to offer in extracted or comb. If comb state how packed, graded and quantity. If extracted, state how put up, mail sample and quote your lowest price. We will buy unlimited quantities if price and quality are right.

C. H. W. Weber & Company

2146 Central Avenue **CINCINNATI, OHIO**

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BEEKEEPERS

We manufacture millions of **sections** every year that are as good as the best. The **cheapest** for the **quality; best** for the price. If you buy them once, you will buy again.

We also manufacture **hives, brood-frames, section holders** and **shipping cases.**

Our Catalog is free for the asking

MARSHFIELD MFG. CO., Marshfield, Wis.

Shipping Cases for Comb Honey

It is an acknowledged fact that comb honey put up in attractive Shipping Cases will bring a better price than the same honey put up in an inferior case. Our Shipping Cases are made of a good, clear grade of basswood lumber and will be a credit to any crop of honey.

TIN CONTAINERS FOR EXTRACTED HONEY

We have a good stock of—

60 lb. Square Cans
12 lb. Square Cans
5 and 10 lb. Round Friction Top Pails

We also carry in stock a complete line of all other beekeepers' supplies

THE LOTZ 1 PIECE SECTION

The kind that does not fold in breaking is manufactured by us

Our 1919 catalogue and price list mailed to you free upon request.

August Lotz Company
Boyd, Wisconsin

A BIG STOCK OF BEE SUPPLIES

ALL BOXED, ready to ship at once—thousands of Hoffman Frames; also Jumbo and Shallow Frames of all kinds—100 and 200 in a box. Big stock of Sections and fine polished Dovetailed Hives and Supers.

I can give you bargains. Send for a new price list. *I can save you money.*

Will take your Beeswax in Trade at Highest Market Price

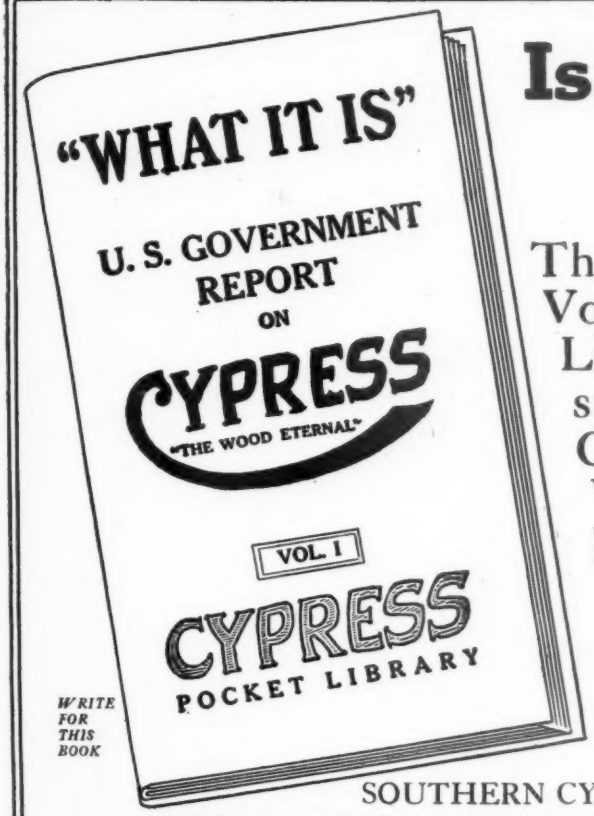
CHAS. MONDENG

159 Cedar Lake Road **MINNEAPOLIS, MINN.**

BARNES' Foot-Power Machinery

Read what J. L. Parent, of Chariton, N. Y., says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames and a great deal of other work. This winter we have a double amount of hives, etc., to make with this saw. It will do all you say of it." Catalog and price list free

W. F. & JOHN BARNES
995 Ruby St., ROCKFORD, ILLINOIS



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Is Uncle Sam's Word Good Enough?

Then Mr. Bee-man, just write for Volume I of the Cypress Pocket Library and read what our respected Uncle has to say about Cypress ("The Wood Eternal.") You'll then see why any bee-hive, or bottom or winter case not made of Cypress is not so good as it might be. 42 other volumes all free. The list is in Volume I. Write and it comes.

SOUTHERN CYPRESS MANUFACTURERS' ASSOCIATION
1251 Hibernia Bank Building, New Orleans, La., or 1251 Heard National Bank Building, Jacksonville, Fla.

Insist on TRADE-MARKED Cypress at Your Local Lumber Dealer's — If he hasn't it, *LET US KNOW IMMEDIATELY*

HIVES
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MADE RIGHT BEE SUPPLIES
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SUPERS
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A COMPLETE LINE OF SUPPLIES

THE KRETCHMER MFG. CO., Dept. A, Council Bluffs, Ia.

HONEY, HONEY, HONEY

We shall be in the market for any quantity, both comb and extracted. Mail sample of extracted and state price asked in first letter.

Beeswax always in demand. Cash or in trade.

"GRIGGS SAVES YOU FREIGHT"
TOLEDO

June is here and the big White Honey Flow with it. Don't get short of sections and foundation, the season promises to be good.

Honey Cans and Cases

Order these early, a limited number of second hand cans on hand at 75c per case

GRIGGS BROTHERS CO.
DEPT. 24 TOLEDO, OHIO

REVISED EDITION
NOW READY

So great was the demand for copies of the A B C & X Y Z of Bee Culture that the new 1917 edition of 15,000 copies is entirely sold out. A supply of books estimated to last a year were completely exhausted in six months.

THE NEW EDITION

is greatly revised and contains 896 pages. It contains the very latest and most up-to-date methods, and is the leading authority of the world today on beekeeping.

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